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PLANT PEST CONTROL

PROGRAMS

FISCAL YEAR 1961

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UNITED STATES DEPARTMENT OF AGRICULTURE



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COOPERATIVE

PLANT PEST CONTROL

PROGRAMS

FISCAL YEAR 1961

Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.



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INTRODUCTION

Plant pest control must be considered high among the technological advances of the past 25 years that have made it possible for only 12 percent of our population to produce the food and feed required by this great country. As the population increases there will be even greater demands on this science to eliminate the waste of low yields from highly productive soils and losses that occur after the land has been committed and the principal cost of production incurred. The invasion of pests, such as insects, plant diseases, nematodes, and weeds from other areas or other countries continuously threatens our agriculture. Ravages by plant pests can only result in a material increase in the cost and reduction in the quality of food and fiber needed to support an ever-increasing population.

The Plant Pest Control Division administers 26 programs of plant protection directed against agricultural and forest pests. These programs fall into three broad categories involving: (1) Incipient infestations of newly-introduced pests, which through cooperative effort with the states may be eradicated or confined to small areas; (2) introduced pests that have become established over substantial areas but not throughout their potential ecological range in this country; and (3) insects and plant diseases native to or generally distributed throughout their ecological or host range which outbreak periodically, causing widespread damage or destruction of crops in areas often remote from their areas of development.

The U. S. Department of Agriculture has not accepted the idea that we should try to learn to live with introduced pests if their eradication or control is economically feasible. Some of the cooperative programs in which the Division and states participate, therefore, have been developed with eradication as the objective. In the case of native pests, such as grasshoppers and Mormon crickets, the common interest is served best through cooperative control programs to suppress outbreaks.

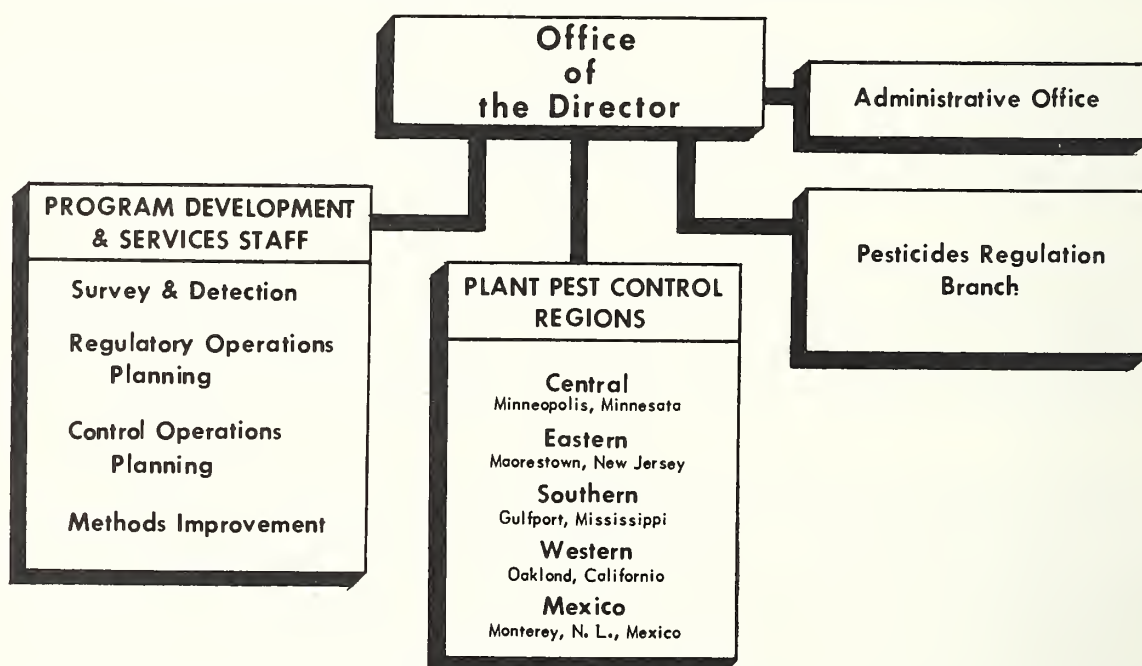
Experience has proven the use of chemicals to be the most reliable of the procedures available for protecting our resources against a wide range of pests. At the same time, the contributions of cultural and biological control measures, plus sound management practices, are fully recognized. These latter practices, however, are seldom sufficient to cope with emergency outbreaks of established pests or outbreaks of those that modern transportation has helped bring into the country.

It is important that the chemicals selected be effective and safe for use. The Division's Pesticides Regulation Branch has the responsibility to administer the Federal Insecticide, Fungicide, and Rodenticide Act. The Act requires that pesticides be properly labeled and registered with the Branch prior to interstate shipment. This registration requirement and premarketing review of label assure the public that these products can be used safely and effectively when the directions on the label are followed. Inspectors systematically collect shelf samples from interstate shipments for examination. Appropriate corrective measures, as provided by law, are taken on shipments found to be in violation. The Branch has the responsibility for certifying to the Food and Drug Administration the usefulness and safety of pesticide chemicals for which tolerances or exemptions are sought. With this certification, an opinion is submitted that the tolerance requested reasonably reflects the amount of residue likely to be found from the proposed use of the chemical.

The Foreign Technical Assistance Regional Insect Control Project operates under a general memorandum of agreement between the U. S. Department of Agriculture and the International Cooperation Administration. The Plant Pest Control Division has been designated as the functional agency responsible for implementing and conducting the activity. This program began

with a request from Iran in 1951 for help in combating a severe outbreak of the desert locust. The success of this work prompted similar requests from other countries of the Near East, South Asia, and Africa. As the locust control work progressed, the cooperating countries expressed the need for assistance to establish practical control procedures involving other pests. The present program includes pilot training, control demonstrations, regulatory procedures, and other activities associated with pest control.

PLANT PEST CONTROL DIVISION



COOPERATIVE FEDERAL AND STATE PROGRAMS

Barberry Eradication

Barberry eradication is one phase of a broad stem rust control program developed as a defense against recurrence of the disastrous stem rust damage to small grains. The work was started in 13 Midwest States in 1918 and with the subsequent addition of other states, 19 states are now included in the eradication area.

Certain species of Barberry (Berberis), Mahonia, and Mahoberberis are the alternate hosts of the fungus, Puccinia graminis, the cause of stem rust of barley, oats, rye, and wheat, as well as of many wild and cultivated grasses. The barberry bridges the gap between the winter resting stage of the fungus and the summer reproductive stage which attacks the small grains. The work program has two broad objectives: (1) Destroying all plants of rust susceptible species of the barberry from both urban and rural properties in the eradication states, and (2) prohibiting the movement of susceptible barberry nursery stock into the eradication area from noneradication states.

The purpose of the eradication phase of the barberry program is twofold: (1) To eliminate the barberry as a source of the rust spores that infect small grains, and (2) to eliminate the source of new rust races which develop by recombination of genetic factors during the sexual stage of the fungus which develops on the barberry. It is the genetic recombinations that normally give rise to the more dangerous races of the rust fungus.

The barberry has been eliminated over most of the eradication area. Approximately 1,027,000 square miles of territory in the important grain-production areas of the 19 cooperating states are considered to be on a maintenance basis, an area from which all known susceptible barberries have been eradicated. The remaining area needing intensive work totals approximately 44,000 square miles. In the area on maintenance, only the quarantine rust observation and informational aspects of the work are continued.

During 1961, more than 6,627,742 susceptible bushes and seedlings were destroyed. Surveys were made on 9,738 square miles and approximately 6,817 square miles were reclassified and placed in maintenance status.



Two bushes from a total of 36 large planted and 246 medium and small volunteer rust susceptible barberry found on a property at Topeka, Kansas--1961.

Burrowing Nematode

Spreading decline is a disease of citrus characterized by a progressive decline in vigor and reduction in yield of mature trees. The primary cause is the burrowing nematode, Radopholus similis (Cobb) Thorne. The condition was first observed in Florida in a single grove near Winter Haven about 1928. By June 30, 1961, 1,460 groves with 17,200 acres had been found infested.

The burrowing nematode was first observed and described by Cobb in 1890 on the roots of bananas in the Fiji Islands. It is known to attack a number of crop plants, including bananas, sugar cane, citrus, avocados, and pineapple, as well as a number of ornamentals, weeds, and grasses. The organism is a rootlet parasite about 1/50 of an inch in length. It spends most of its life within the root tissues, emerging to seek new feeding places only when the attacked rootlets degenerate. Damage to the host is caused by the destruction of feeding rootlets, which reduces the uptake of nutrients and water, causing the plant to become progressively less thrifty.

Spread of the burrowing nematode to new groves occurs through infested transplants, or by the movement of soil containing infested rootlets. Spread within a grove appears to be mostly through direct contact of healthy roots with infested roots.

The burrowing nematode program is a cooperative effort between the Plant Pest Control Division and the Florida Bureau of Plant Industry. The objective is to prevent spread of the burrowing nematode to other citrus-producing areas within the state, as well as to citrus areas in other states. The operations program involves the establishment of chemical barriers around infested groves to prevent spread. As groves deteriorate, the trees are destroyed. The ultimate objective is eradication.

Surveys are made in citrus and ornamental nurseries and of sites where new citrus nurseries are to be established. Citrus groves are surveyed to: (1) Detect new infestations; (2) delimit for the purpose of establishing barrier zones; and (3) to check for reinfestations in replanted areas.

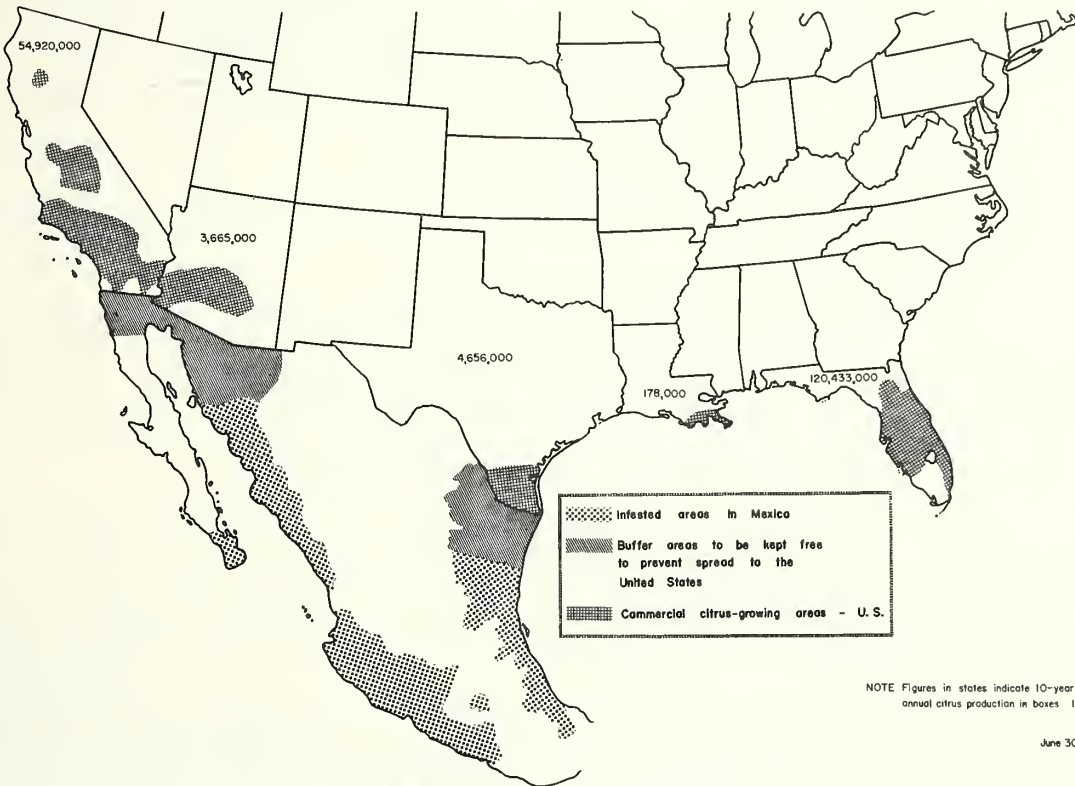
Specific accomplishments during 1961 included the following: In Florida, 205 additional infestations with 558 acres were found in the 2,210 properties surveyed. The Florida Bureau of Plant Industry pushed trees and fumigated 531 additional acres on 99 properties. Exploratory survey of citrus and ornamental nurseries was made on 79 properties in the State of Texas. Seven infestations were found in Texas plant-growing establishments handling subtropical ornamentals. Restrictions were placed on these establishments for shipments to citrus-growing areas until plant beds and benches were cleaned, fumigated, and found free of infestations.

Citrus Blackfly

The citrus blackfly (Aleurocanthus woglumi), referred to in Mexico as "la mosca prieta," was described by Ashby in 1915. This citrus pest is a native of the East Indies, but it is now known to occur throughout the West Indies, Mexico, and Central America. While this insect belongs to the family Aleyrodidae, known as whiteflies, the term whitefly does not fit it, inasmuch as it is bluish-black or dusky in all stages. The female deposits eggs in a characteristic spiral on the underside of leaves, and in a lifetime she may lay more than 100 eggs. The nymphs and pupae are shaped like a typical whitefly but are quite spiny. The nymphs are dark brown and the pupae are black. Three to six generations a year can be expected. In 1934, the citrus

blackfly was reported from Key West, Florida. Eradication measures were immediately undertaken and the infestation was eliminated. It was next found in Sinaloa, Mexico, in 1935. From Sinaloa it has spread over much of Mexico, and in 1955 it reached the citrus growing area of Texas. The Texas infestation was eradicated in 1955 and in 1956.

CITRUS BLACKFLY CONTROL



In 1948, the United States Department of Agriculture and the Mexican Defensa Agricola undertook a cooperative eradication program in northern Mexico. The objective is to locate and eradicate infestations to prevent spread to American citrus areas adjacent to the Mexican border. The Mexican Defensa Agricola applies the control measures and enforces the quarantine in the Mexican states adjoining the international border. Excellent control has been accomplished.

In years past, the standard spray formula contained 1 2/3 gallons of light emulsive oil and 1/2 pound five percent rotenone mixed in 100 gallons of water. This was applied to infested host trees three times at 21-day intervals. Malathion has been used as a substitute but requires four applications at eight- to ten-day intervals. Trithion is now being used as the insecticide. It has been found to be much more effective against the more resistant forms of the blackfly (eggs and pupae) than malathion proved to be. Trithion requires fewer treatments and accomplishes the objective at a lower cost. Biological control is practiced in citrus areas south of

the chemical control zone. This biological control program has been very effective in assisting with the task of keeping the infestation out of the areas along the border.

At the end of the fiscal year, no infestations of citrus blackfly were known to be established within the United States, even though interceptions of infested materials at border stations are common.

The following table shows work accomplishments in the year ending June 30, 1961:

	<u>Properties Surveyed</u>	<u>Hosts Examined</u>	<u>In the Control Zone</u>		
			<u>Properties Infested</u>	<u>Hosts Infested</u>	<u>Properties Treated</u>
Texas	8,188	164,226	None	None	None
Republic of Mexico	24,632	1,012,091	102	1,236	883

European Chafer

The European chafer (Amphimallon majalis) is a pest of pastures, lawns, legumes, turf, and winter grains. Although it was observed first in this country in 1940 in Wayne County, New York, it is believed to have been brought here from Europe in the late 1920's or early 1930's. By 1958 it had spread to nine counties of western New York State, and in 1959 infestations were found in Brooklyn and the New York harbor area. Isolated infestations have occurred in Connecticut, New Jersey, and West Virginia.

This insect is destructive only in the larval stage. The larvae or grubs are C-shaped and white, with brown heads. They feed on roots of grasses during the summer and burrow below the frost line in the fall. In the spring they resume feeding on roots and most of them change to pupae. In their final stage, the beetles emerge from the soil at dusk and swarm in a mating flight around trees or light poles. The beetles are most abundant from mid-June to mid-July.

Each year surveys are made in affected states or exposed areas. Dead or dying spots in lawns, in turf of golf courses, cemeteries, pastures, or in fields of winter grains indicate possible European chafer infestation. The damage is similar to that caused by the Japanese beetle or the May beetle.

Research has been concentrated on the development of effective traps using various attractants to supplement visual scouting activity. Trapping has been an important adjunct in the detection program for this insect. Traps are useful aids in determining the intensity of infestation in known infested areas, as well as in determining the extent of spread in areas not under regulation.

During the 1961 season, extensions of infestation were found in Niagara, Cayuga, Chenango, and Oneida Counties in New York State and at three new locations in the metropolitan New York area, two on Staten Island and one in Brooklyn. In New Jersey, the chafer spread to the Jersey City-Bayonne section. Findings were negative in West Virginia but small numbers were noted at Meriden, Connecticut.

The most intensive survey for the adult stage of European chafer this season was carried on in Connecticut, New Jersey, New York, Pennsylvania and West Virginia. About 100 new design, 15 watt, baffled black light traps and a smaller number of Java citronella-eugenol baited traps

were employed. In addition, home gardeners and others were encouraged to submit specimens of all "white grubs" found to Federal or state plant pest control offices for identification. The Agricultural Research Service black light traps were redesigned to facilitate their commercial production. This was done in cooperation with the Agricultural Engineering Research Division. Specifications were prepared for the purchase of inverters for battery powered units.

In an effort to keep the chafer from spreading, infested areas are under Federal and State quarantines. Where these are in force, a certificate is required for the shipment of sod, topsoil, gravel, sand, and plants with soil on the roots. Certificates are issued following treatment with insecticides or other procedures which will assure absence of pest risk. Nearly all regulatory actions processed during the fiscal year took place in New York where 48,000 acres in nurseries were field inspected. Inspections of 750 other premises and packing sheds were also completed. Supervision was provided for the treatment of 250 acres of nursery land. Commodity treatments totaling 66,500 shipments entering commercial channels were handled during the same period.

Surface soil residual insecticide control treatments were applied to 3,600 acres in New York and to more than 2,400 acres in New Jersey. Two and one-third acres were treated at Meriden, Connecticut.

EUROPEAN CHAFER CONTROL

ORIGINAL FIND

CONNECTICUT

New Haven Co. - July 1 & 5, 1951

NEW JERSEY

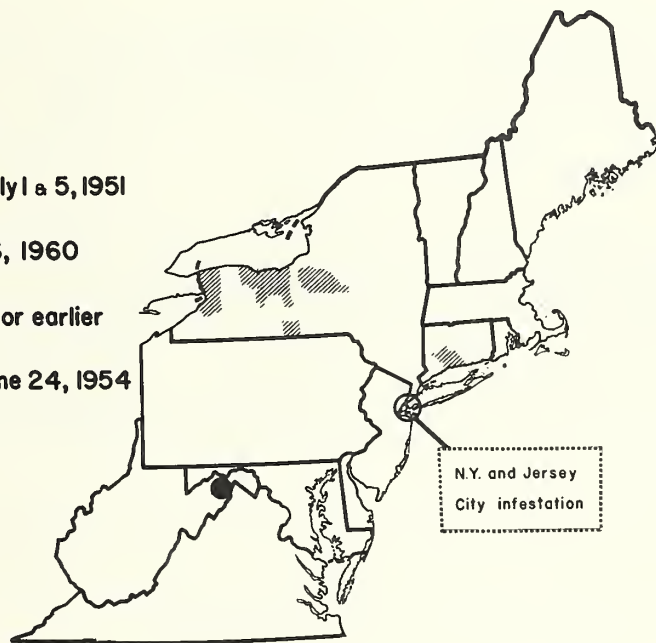
Hudson Co. - July 6, 1960

NEW YORK

Wayne Co. - 1940, or earlier

WEST VIRGINIA

Hampshire Co. - June 24, 1954



Operations, PPC, ARS, USDA
June 30, 1961

Golden Nematode

The golden nematode (*Heterodera rostochiensis*) is a minute eelworm that attacks potato and tomato plants. In this country it is found only on Long Island, New York, where it was discovered in 1941 in Nassau County. This nematode is known to occur in many countries of Europe and in England, and more recently it has been found in Mexico, Peru, and Spain.

During its life cycle the nematode passes through three stages--egg, larva, and adult. In the spring, hatching of the eggs is stimulated by a chemical given off by potato or tomato roots. The larvae leave the protective cyst in which they have been encased and enter the roots, where they feed. They undergo a series of changes. The females become stationary, swell, and break through the roots to which they are attached. After fertilization, they continue to enlarge and form into a protective cyst encasing eggs and larvae of the next generation. The cysts at first are pearly white, later turn golden, then orange, and finally brown.

The Plant Pest Control Division, in cooperation with the New York State Department of Agriculture and Markets, has conducted a program to prevent the spread of the nematode from Long Island. Periodic detection surveys are made of other potato-producing areas.

This year some 60,000 field and grader soil samples were taken from more than 100,000 acres in 56 counties in the six states including Delaware, Maine, New Jersey, New York, Pennsylvania, and Virginia. Two-thirds of these samples were from Long Island farms. In addition, more than 5,900 soil samples were collected from a total of 191,000 potato producing acres distributed over the States of Alabama, Florida, Georgia, Iowa, Michigan, Minnesota, North Carolina, North Dakota, South Dakota, Texas, and Wisconsin. Results were negative in all cases except Suffolk County, Long Island, New York, where the nematode was found on ten new properties totaling 828 acres.

A New York State quarantine invoked in 1944 has been continuously in force and includes all of Nassau and Suffolk Counties on Long Island. As infestations are found, the land is removed from host-crop production. About 15,809 acres of potato-producing land on Long Island have been reported infested since the beginning of the program. Of this number, only 5,764 acres are now available to agriculture, as 9,300 acres of the land have been developed for real estate and 744 acres have been treated and released.

After repeated demonstrations of the effectiveness of the nematocide dichloropropane-dichloropropene--D-D--as a soil fumigant, a cooperative eradication program was initiated in June, 1960. In 1959, 13 fields, comprising 583 acres, were treated with this fumigant at the rate of 90 gallons per acre in split applications of 45 gallons each, about ten days apart. When post-treatment surveys of these fields failed to reveal any viable golden nematode cysts, the fields were returned to potato production in the spring of 1961. A two-way moldboard plow applicator was designed and constructed to facilitate field fumigation treatments. This equipment was tested in 1961. Tests were also made to determine if nematocides could be applied effectively in irrigation water.

During the 1961 season, farmers made available 1,200 acres of infested potato land for treatment. In addition to the soil treatments, Vapam is applied as a drench to headlands, farm roads, and farmyards adjacent to treated fields to destroy the nematode in those places and thus prevent the areas from serving as reservoirs for reinfestation.



Soil fumigation to eradicate golden nematode. One tractor unit can treat about ten acres per day.

Grasshoppers

Grasshoppers are generally distributed throughout the United States. The most severe outbreaks occur in the Western and Midwestern States. Each year the Division cooperates with the states, the farmers, and ranchers in the suppression of outbreaks.

Most species of grasshoppers hatch during the spring from eggs deposited in the ground the previous season. However, in Arizona both spring hatching and fall hatching species normally occur. The nymphs develop into adults during the summer. Deposition of eggs by the adults takes place later in the summer and on into the late fall.

Grasshoppers feed on a wide variety of host material, including forbs, cultivated crops, and range grasses. The development of the pest to outbreak levels is closely associated with the prevalence of certain climatic conditions. When the 'hoppers occur in outbreak numbers, severe economic losses occur.

Grasshopper control programs are designed to destroy infestations of grasshoppers to protect farm and range crops. The Plant Pest Control Division provides technical leadership in evaluating infestations, planning and executing control, and evaluating results. Control on ranges and idle lands is financed jointly by the Federal and State Departments of Agriculture, the counties, other Federal agencies, and the landowners.

The program activity falls into four main categories: (1) Annual surveys to locate and evaluate infestations; (2) participation in control of infestation on roadsides, idle lands, and rangelands when migratory species are involved that are likely to spread over wide areas; (3) control on federally-owned lands in cooperation with the land managing agencies; and (4) provide technical assistance and program services to farmers who finance local control on croplands.

Cooperative surveys completed in the late summer and fall of 1960 indicated grasshopper populations in economic numbers on 4,467,720 acres of rangeland in 14 Western and Midwestern States.

Areas where control may be necessary are determined by nymphal surveys made in the spring. The acreage treated depends upon a combination of rancher interest and biological conditions.

Control is currently achieved through use of insecticide sprays, or coarse bran bait impregnated with insecticide, applied with ground or aerial equipment. Dependent upon land use, certain insecticides such as aldrin, dieldrin, heptachlor, malathion, Sevin, and toxaphene, are recommended at specific dosages. The states, counties, landowners, other Federal agencies, and Plant Pest Control each participate financially in this cooperative program.

During fiscal year 1961, 33,558 acres were treated. The following table reflects distribution of acreage treated:

<u>ACRES TREATED</u>			
<u>State</u>	<u>Ground Equipment</u>	<u>Aircraft</u>	<u>Total Acres</u>
North Dakota	5,300	-	5,300
South Dakota	1,100	-	1,100
California	3,247	6,833	10,080
Montana	279	11,425	11,704
Utah	2,000	-	2,000
Wyoming	-	3,374	3,374
TOTAL	<u>11,926</u>	<u>21,632</u>	<u>33,558</u>

In a continuation of effort to improve methods, and in cooperation with the Entomology Research Division, test applications by aircraft were made to compare results of water and oil sprays, coarse and fine sprays, and insecticide Sevin with and without a sticker. The results of these tests were not conclusive because of the migration of the grasshopper species prevalent in the test areas. Additional tests were made to compare effectiveness of several insecticides. Tests will continue in 1961 aimed at resolving questions relating to comparisons in effectiveness between oil and water as diluents in different environments as well as to compare coarse and fine sprays.

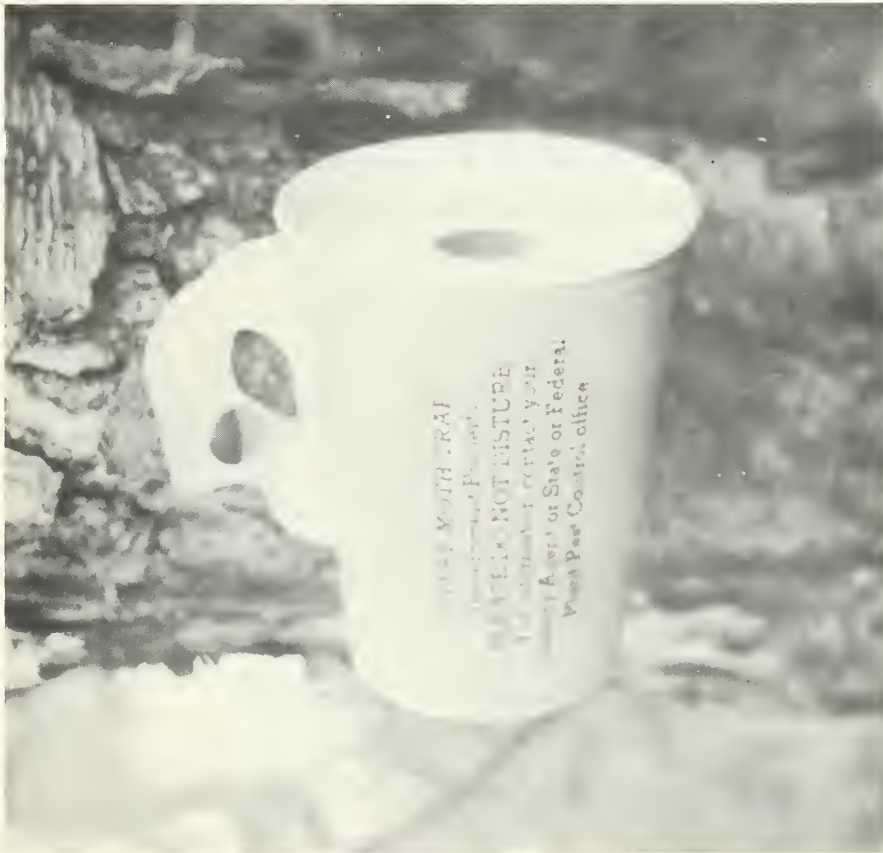
Gypsy Moth

The gypsy moth (*Porthetria dispar* L.) was brought into this country in 1869 from France by an amateur entomologist for experimental purposes. It escaped from his laboratory at Medford, Massachusetts, and became established locally. During the next 20 years, it spread to nearby towns where it destroyed many fruit and shade trees. Following a severe outbreak in 1889, the State of Massachusetts appropriated funds for its eradication. It was believed to be under control and eradication efforts ceased in 1900.

It was not until 1905 that the State resumed control work. Meanwhile, the pest had spread over 2,000 square miles in Massachusetts and into portions of Maine, New Hampshire, and Rhode Island. Federal funds were made available in 1906 to aid in the control effort. In spite of the work that was done, the gypsy moth continued to spread throughout New England. In 1923, a moth-free barrier zone thirty miles wide, extending along the eastern border of New York from Canada to Long Island, was established to prevent further spread to the west. This barrier was breached in 1938 when a hurricane carried egg clusters beyond the protective area. The gypsy moth was later discovered in scattered areas of New Jersey and Pennsylvania. In 1954, an infestation was discovered at Lansing, Michigan.

The gypsy moth caterpillars are brown, hairy worms recognized by several pairs of blue and red dots on their backs. They feed mainly at night. There is only one generation a year. The overwintering eggs hatch the latter part of April and early May. The developing larvae feed on apple, basswood, gray and river birch, and oaks, poplars, willows, and other deciduous and evergreen trees. They form pupae in late June or early July and emerge as moths in July or early August. The moths do not feed. Only the males can fly. The eggs are deposited in clusters of 400 to 500 eggs on stones, trunks of trees, fences, and other objects. The movement of articles infested with egg masses constitutes a source of spread. Winds are an important factor in local dispersal of larvae.

Tree damage is caused by larvae of the gypsy moth feeding on the leaves. One or two successive defoliations retard growth or may kill hardwood trees. Evergreens are killed by a single defoliation.



The Johnson trap--a new economical, disposable survey tool. A synthetic sex attractant material inside the trap lures male moths into it where they become caught in a sticky substance called "tanglefoot." The female gypsy moth is unable to fly.

Sex-attractant traps are used in survey operations to determine the distribution of the gypsy moth and for checking the results of eradication programs. Through research on artificial lures, an effective and inexpensive attractant, "gyplure," has been developed which permits a much more intensive trapping program. Test was made of this synthetic sex attractant to determine its value in pinpointing infestations. Plans were made to test it to determine its possible use in reducing mating and to test lure-toxicant combinations and lure-tanglefoot combinations in the traps. Plans were also completed for the establishment of a Gypsy Moth Methods Improvement Laboratory to be located at Otis Air Force Base in Massachusetts.

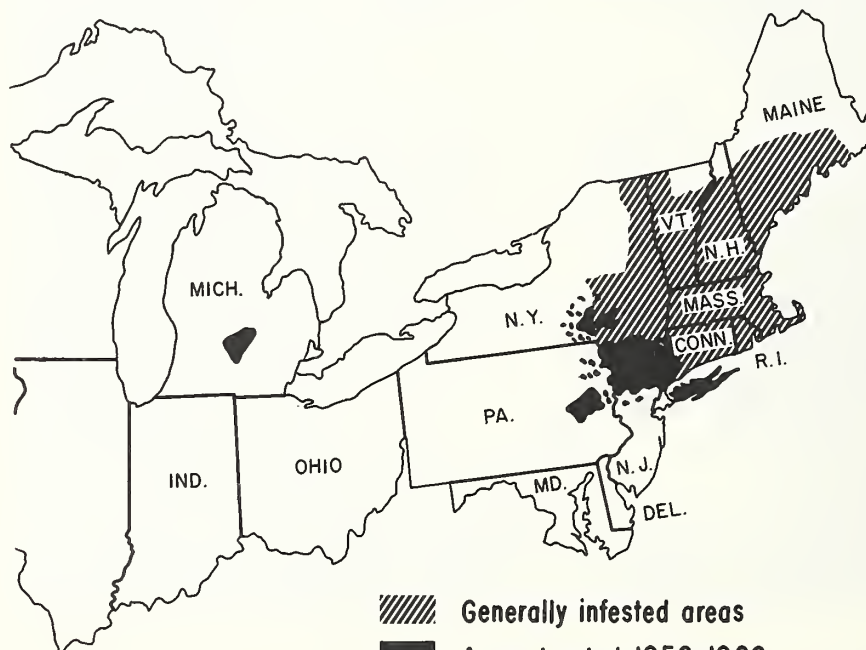
More than 29,000 traps were used this year in a male-moth survey of 12 1/3 million acres in New Jersey, New York, and Pennsylvania. Additional traps were placed in Delaware, Maryland, Vermont, Virginia, and West Virginia. One moth was trapped in a nonregulated area of New Hampshire and 64 moths were trapped outside regulated areas in Vermont. In New York, 12 light infestations were found in nonregulated areas and seven in quarantine suppressive areas.



More than 5,200 traps were used in Michigan. Some scouting for egg masses was done in Indiana and Ohio, incidental to other survey activities. As of June 30, 1961, no gypsy moth infestations were known to exist in Michigan or elsewhere in the Central Plant Pest Control Region.

A Federal quarantine regulates the interstate movement of forest and quarry products, and other commodities which could cause spread.

GYPSY MOTH ERADICATION

Status of Cooperative Federal-State Eradication Program



 Generally infested areas
 Areas treated 1956-1960
 (4.4 mil. acres)

June 30, 1961

During the 1961 season, 32,700 acres were treated with insecticides under the cooperative program in New York State. This included all known infestations outside regulated areas and within the quarantined suppressive area. Some spraying was done in northeastern woodlands of the State to prevent defoliation. The New York State Department of Conservation also treated an additional 24,000 acres to suppress gypsy moth populations. DDT was used except on dairy cattle grazing lands where Sevin was used. In Vermont, 31,000 acres near the Vermont-Canadian border were treated with Sevin or DDT in cooperation with the State Department of Agriculture. Five other states treated more than 75,000 acres in infested areas to suppress infestations and to prevent defoliation. Surveys indicated defoliation of about 49,000 acres in 1960, as compared to approximately 14,000 acres in 1959.

Imported Fire Ant

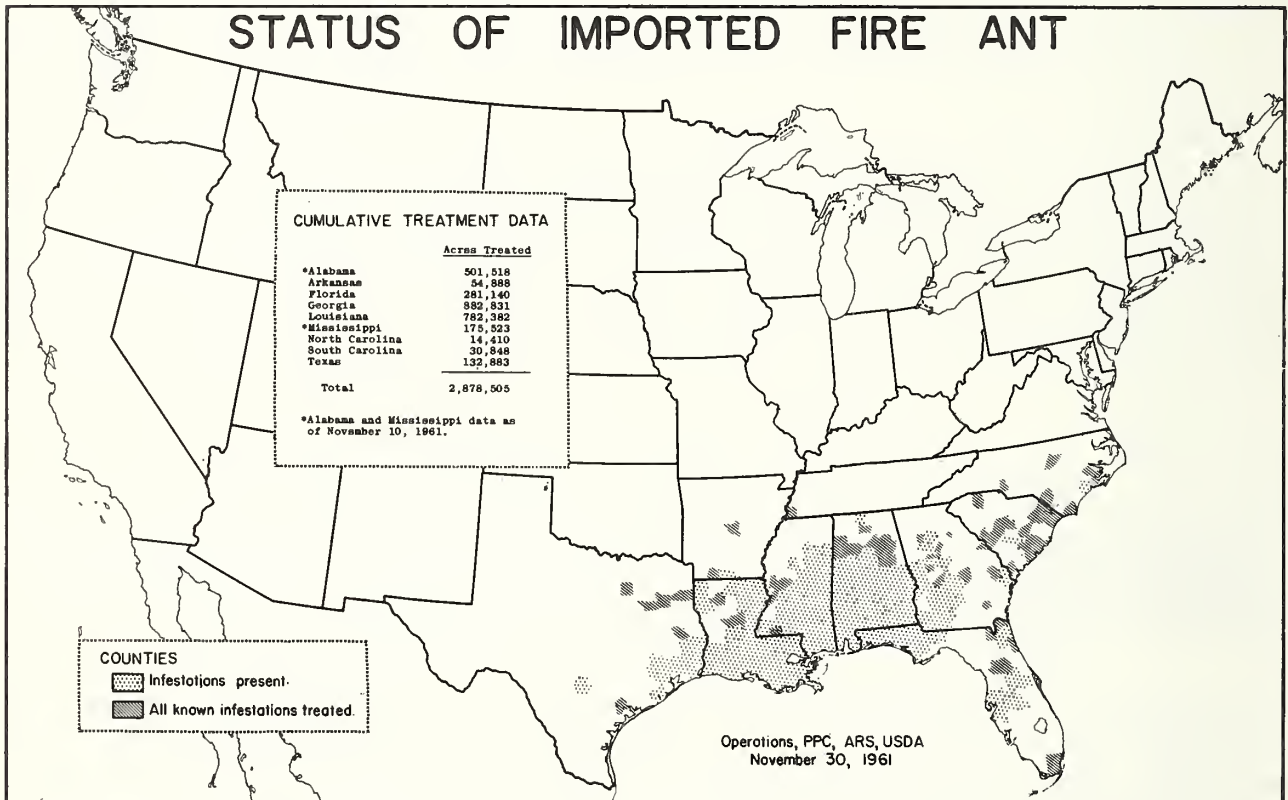
The imported fire ant (*Solenopsis saevissima richteri*) is thought to have been brought into this country from South America shortly before 1920 through the port of Mobile, Alabama. Although the ant was observed around Mobile during the 1920's, entomologists did not recognize until 1930 that it was of a species distinct from two native species of fire ants common in the Southern States. The pest was apparently confined to southern Alabama for a number of years, but by the early 1950's it had spread to Arkansas, Florida, North Carolina, South Carolina, and Texas, with heavy infestations in Alabama, Georgia, Louisiana, and Mississippi. The Tennessee infestation was eradicated in 1953.

The imported fire ant is a major pest in heavily infested urban or rural areas. On farms it is both a nuisance and a liability. Its mounds damage machinery used in harvesting hay, forage and seed crops; the ant interferes with hand labor in fields and orchards; it is a nuisance around homes and farmlots; and it damages some crops. In urban areas, it prevents full use of yards and recreation areas. The mounds are unsightly in cemeteries, lawns, parks, and roadways, and they increase maintenance cost. In addition, the sting is painful to everyone and even dangerous to the few who are allergic to its toxic venom.

In response to repeated appeals from infested states for Federal assistance, the Congress in the fall of 1957 authorized the Department of Agriculture to join interested states in an eradication program. Plans were developed jointly by the Plant Pest Control Division, the State Departments of Agriculture, and state and local imported fire ant committees for organizing and conducting the eradication program. Special emphasis has been given to the prevention of spread by eradicating outlying infestations in states and counties outside the area of general infestation. Nurseries doing interstate business are soil treated and all carriers of infestation are subject to regulation. The program is jointly financed by the Federal Government, and/or the states, local agencies, and individual property owners.

Through the results of research and methods improvement work, it has been possible to progressively reduce the rate of insecticide from two pounds to one and one-fourth pounds, and finally to one-half pound per acre. The standard treatment throughout the area at the end of the year was one-half pound of granular heptachlor per acre applied by aircraft in split applications of one-fourth pound each, three to six months apart. Ground power or manual equipment is used on areas where more precise application is necessary. Testing of alternate insecticides for use in treating dairy pastures was continued. Progress in the development of a fire ant bait and in preparations for testing the bait on a field scale during the coming season represent another achievement. Extensive evaluations of aircraft guidance systems were made in the search of techniques to improve the accuracy of aerial treatments.

During the 1961 fiscal year, 450,238 acres were treated--320,166 by air and 130,072 by ground equipment. Most of the aerial application contracts were in Georgia and Louisiana, with smaller ones in Arkansas, South Carolina, and Texas. The total acreage treated since the beginning of the program is approximately 2,725,000. During the year, infestations were found in 12 counties not previously known to be infested, but most of these were small isolated infestations. No new states were found infested in 1961 and all new county infestations were near those previously known.



Japanese Beetle

The Japanese beetle (*Popillia japonica*) was first reported in the United States at Riverton, New Jersey, in 1916. When efforts to eradicate the infestation failed, a program was developed to retard spread to new areas. A Federal quarantine was invoked in 1919 to protect uninfested areas. The quarantine has been extended, as needed, to infested portions of states and to additional, newly-infested states. Regulations apply to soil, balled and burlapped nursery stock, grass sod, plant crowns or roots, and bulbs which might carry Japanese beetle larvae. Insecticide soil treatments, soaks, dips, and fumigation are used to destroy the grubs. Nurserymen apply approved dosages of residual insecticides required to make their stock eligible for regulatory certification to any destination.

The adult Japanese beetle is a metallic brown and green insect about one-half inch long, and marked with six small patches of white hairs along the sides and back of the body, under the edges of the wings. It feeds on some 275 kinds of plants, among which are grapes, peaches,

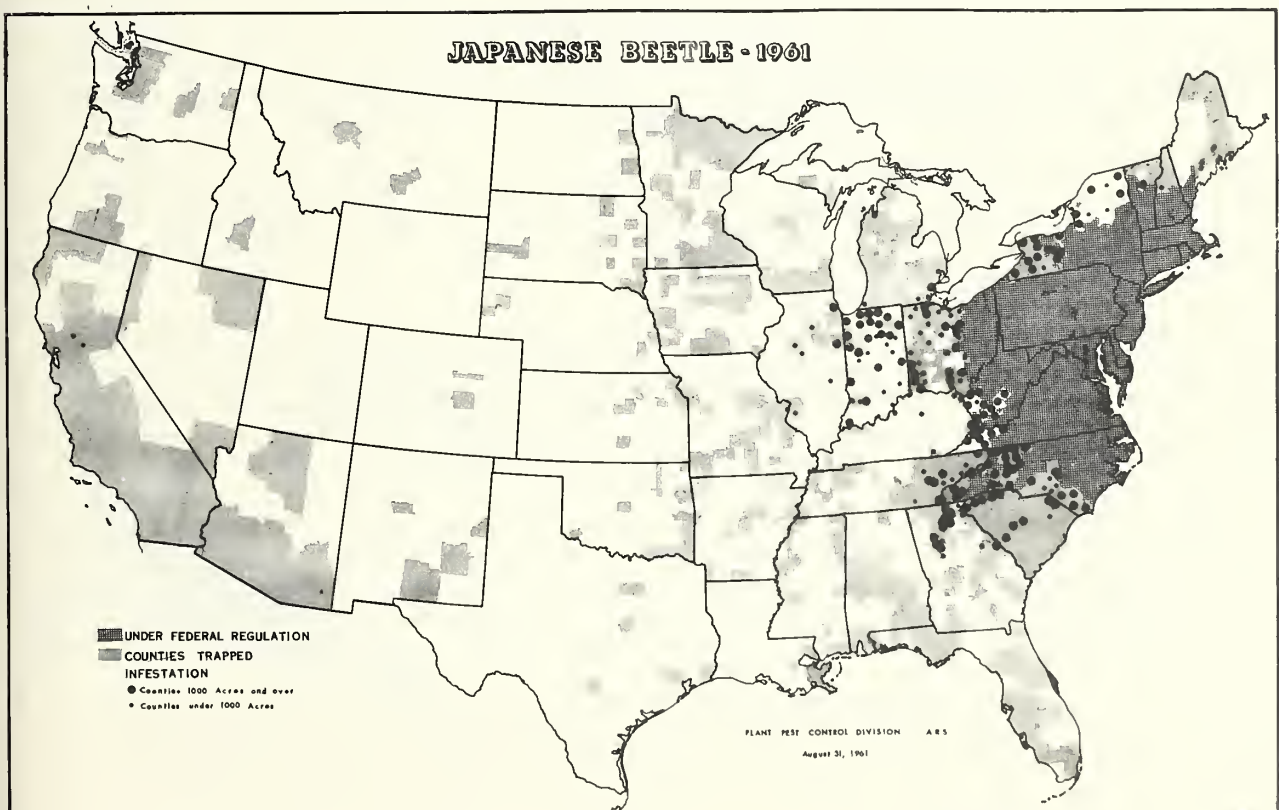
apples, soybeans, and a large group of ornamentals. The beetles reduce the leaves to lace-like skeletons. Fruit is rendered unfit for human consumption as a result of the ravenous feeding by the adult beetles.

The female burrows into the ground where she lays a few eggs and returns to plants for feeding. Beetles are most numerous in July and disappear in most areas in September. The grubs hatch from the eggs and do extensive damage to turf in pastures, lawns, and golf courses. The Japanese beetle is estimated to cause losses of approximately \$10,000,000 annually in the total United States area of infestation.

Procedures developed in cooperation with the Entomology Research Division were used during the season for treatment of aircraft with micronized DDT dust to prevent spread of adult beetles. Micronized Sevin dust used in aircraft resulted in a faster knockdown and kill than micronized DDT and is being evaluated for possible use next season.

Several stickers for retaining Sevin on foliage were tested in small plot treatments. Some of these looked promising for periods up to ten days after exposure to heavy rainfall.

Motor vehicles, railroad reefer cars and aircraft all contribute to spread of the adult Japanese beetle. The solution to the problem of eradicating the beetle in aircraft appears to have been found in the use of the CO₂ propelled micronized DDT. This procedure, deposits minute amounts of the insecticide in passenger and baggage compartments, and is proving to be very effective in combating the beetle without harm to passengers. Soil treatment of turfed areas of airports, initiated in 1959, was expanded this year with soil applications being made at 15 commercial and military airports located in Maryland, New Jersey, New York, Ohio, Pennsylvania, and Virginia.



In the 45 years since the Japanese beetle entered this country, it has spread to New England and southwestern Ontario, to isolated points on the eastern borders of Iowa and Missouri, and to northern Georgia and eastern Tennessee. The Japanese beetle was discovered at Sacramento, California, for the first time June 7, 1961. The California infestation covers an aggregate of about 500 acres. A program of extensive trapping was started immediately and plans were made to apply foliage sprays and granular soil treatments to the infested area and a sizeable buffer zone. The California objective is complete eradication. California established a State quarantine which became effective June 29, 1961.

Long-distance spread of the pest has been greatly restricted by eradication treatments in outlying areas in combination with suppressive treatments in areas of general infestation. During fiscal year 1961, approximately 132,000 acres were treated with foliage or soil insecticides principally in Georgia, Illinois, Indiana, Kentucky, Michigan, Ohio, and Tennessee, in an effort to retard spread.

Khapra Beetle

The khapra beetle was first described from India as Trogoderma granarium by Evarts in 1898. This insect is considered the most serious pest of stored grain and is now reported from all principal grain growing areas, except Australia and South America. The first recognized infestations of khapra beetle in the United States were reported from Tulare County, California, in October 1953. There are, however, indications that the beetle was present in California as early as 1946. In the United States, established infestations have been found in Arizona, California, New Mexico, and Texas. Infestations have occurred in Mexico in the States of Baja California, Chihuahua, Jalisco, and Sonora.

The khapra beetle, a dermestid, is a small insect, the female being about 1/8 inch long and the male somewhat smaller. The newly hatched larva is about 1/25 inch long with a yellowish-white body and a brown or yellowish-brown head. As the larva develops, the color becomes a reddish-brown except for the underside which is a uniform cream color. The full-grown larva is about 1/4 inch long. A generation can vary from 220 days at 70° to 26 days at 95° F. The optimum temperature seems to be about 85° to 90° F.

Damage to stored products is caused by the feeding of the larvae. The larvae can subsist on a wide variety of stored products but they prefer grain and grain products. Infested grain in storage for long periods of time may be completely destroyed by the pest. The adult khapra beetle is not known to feed.

Survey for khapra beetle is a difficult and time consuming job. In order to find a light infestation, it is necessary to make repeated inspections because the larvae seek cracks in the walls of storage bins, seams of bagging material, and other hard-to-get-to places. The khapra beetle can live without food for long periods of time. Its relative resistance to many insecticides makes this insect difficult to control once it becomes established.

When a building is found to be infested, it is immediately placed under quarantine regulations and scheduled for fumigation. In the fumigation process, infested buildings are covered with gastight tarpaulins and methyl bromide is introduced at the rate of five pounds per 1,000 cubic feet. Additional methyl bromide is added, if necessary, to maintain a gas concentration of two pounds, or over, per 1,000 cubic feet for 24 of the 48 hour period the building is under fumigation.

At the close of fiscal year 1961, the khapra beetle situation in the United States and Mexico continued to look encouraging. While infestations are still being found, the interval between finds is much greater than in 1955 or 1956. In 1955, one infestation was found for every 163

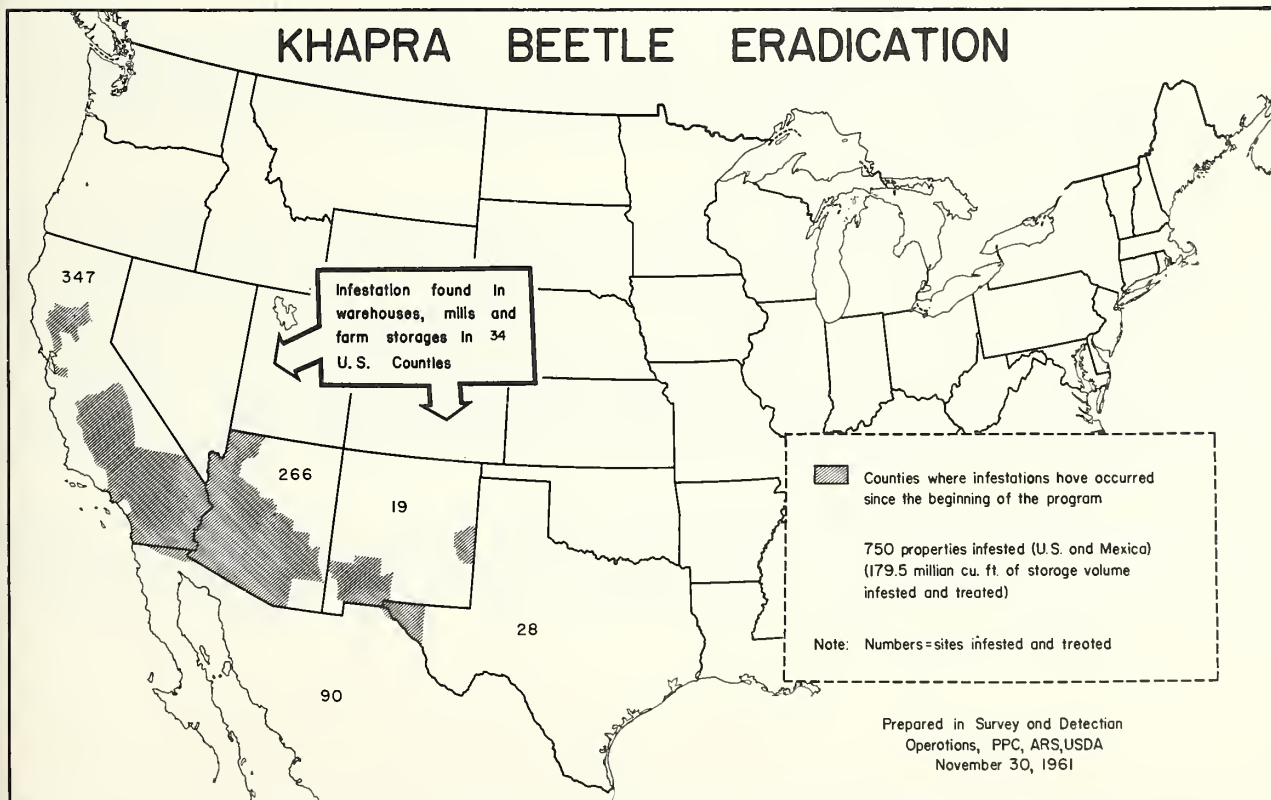
inspections in the infested states; in 1961, the rate was one infestation for every 2,316 inspections. At the close of the year, all known infestations had either been fumigated or were under contract for treatment. Since the beginning of the program, 746 properties have been found infested in the United States and Mexico involving a grand total of approximately 177,359,377 cubic feet.

Inspection of the principal grain handling establishments is on a regular schedule throughout the continental United States. The importance of continuing inspections is emphasized by the 152 khapra beetle interceptions at 22 ports of entry reported by the Plant Quarantine Division during fiscal year 1961.

The following table presents work accomplishments in the regulated areas during fiscal year 1961:

	Inspections	Infested		Treated		Remaining	
	No. Prop.	No. Prop.	Cu. Ft.	No. Prop.	Cu. Ft.	No. Prop.	Cu. Ft.
Arizona	13,569	20	1,729,855	20	1,984,486	-	-
California	19,232	6	4,051,265	3	1,556,832	3	2,494,433
New Mexico	3,689	-	-	-	-	-	-
Texas	9,709	-	-	-	-	-	-
Republic of Mexico	<u>1,322</u>	<u>3</u>	<u>633,003</u>	<u>-</u>	<u>-</u>	<u>3</u>	<u>633,033</u>
Total	47,521	29	6,414,123	23	3,541,318	6	3,127,436

KHAPRA BEETLE ERADICATION



Mexican Fruit Fly

The Mexican fruit fly (Anaserepha ludens) is a native of northeastern Mexico. The fly was discovered for the first time in southern Texas in 1927. In 1953, a well-established infestation was discovered near Hermosillo, Sonora, Mexico, approximately 185 miles south of the Arizona border. In the fall, the Mexican fruit fly migrates to the Rio Grande Valley of Texas where it infests citrus groves.

The Mexican fruit fly attacks citrus and many other kinds of fruits, and is the only fly in this country known to deposit its eggs in grapefruit and oranges. The female fly pierces the rind of the fruit and deposits eggs just beneath the skin. The resulting larvae burrow into the fruit and render it unfit for human consumption.

The adult Mexican fruit flies are beautifully colored, and are considerably larger than houseflies. They have yellowish-brown bodies and their wings are banded with yellow and brown. The larvae are white, legless, and move by expanding and contracting the body segments. When the larvae mature, they leave the infested fruit which by that time has usually fallen from the tree. They crawl a short distance, burrow into the soil, and then enter the pupal stage. The periods required for hatching of the eggs and for completion of the larvae and pupal stages vary with the temperature, variety of fruit, and other conditions. The pest may produce four to six generations a year, with the shortest period in which the egg-to-adult cycle is completed being about 36 days.

Fruit fly infestations are normally discovered by inspection of host fruits and by the operation of traps. Unless the population is extremely high, the presence of adults will go undetected until taken in traps or infested fruit is found.

The combined efforts of state and Federal agencies within the United States and the Republic of Mexico have successfully stopped the Mexican fruit fly at the California border in northwest Mexico. Arizona has likewise remained uninfested. However, the threat of invasion to both Arizona and California remains.

The lower Rio Grande Valley of Texas becomes reinfested annually by natural migration. In Texas, the control program is primarily the enforcement of regulatory measures to prevent spread. Surveys each year are necessary to establish the dates for inauguration of the requirements for fruit certification.

Arizona and California, because of their proximity to the fruit fly infested area in Mexico, are vulnerable to infestation from Mexico. Detection and control activities are, therefore, carried on for the purpose of early detection and the prompt eradication of any incipient infestation that might become established. The program activities include trap operation and field inspection of host fruit in the two-state area. In addition, bait insecticide sprays are applied to host trees in southern California to attract and kill any flies that might be in the area. As an added precaution, a cooperative spray program is conducted in southern San Diego County, California, throughout the spring, summer, and fall months. The actual application of the sprays is the responsibility of the State Department of Agriculture. The Plant Pest Control Division furnishes the insecticide.

Over 1,500 traps were operated in Baja California, Mexico, near the California border. When Mexican fruit flies were caught, suppressive measures were promptly initiated to prevent migration into the United States. During this fiscal year, over 23,000 acres were sprayed in Mexico.

Mormon Crickets

Mormon crickets, large, wingless, long-horned grasshoppers, are a threat to agriculture in the United States in the area from the Missouri River westward to the Sierra Nevada and Cascade ranges, and from the Canadian border to Arizona. During the 1930's, Mormon crickets reached the largest outbreak proportion in history with eleven states suffering damage in 1938. Idaho, Montana, Nevada, and Wyoming have had the most widespread outbreaks. The suddenness and severity of the Mormon cricket attack on range and cultivated crops make it one of the most spectacular of all insects. The greatest damage is to range forage. The pest feeds on more than 250 species of range plants and on all cultivated crops grown in the area where it occurs.

The Mormon cricket maintains itself in permanent breeding areas of the mountain ranges of the West. When populations increase to a high concentration, the crickets move out and infest adjacent range and farmlands. Two or three years are usually required for an outbreak to develop.

Mormon cricket eggs are laid just below the soil surface in summer. The young crickets develop fully within the eggs before the ground freezes, but do not hatch until the ground warms the following spring, normally about April 1. The nymphs pass through seven stages of growth. The period from nymph emergence to maturity is about 60 days. Approximately ten days after maturity the females start mating and egg laying.

After approximately five molts, Mormon crickets begin migrating. The converging bands may cover hundreds of acres. As the migrations continue, distances of 25 to 50 miles may be covered during the crop season.

Measures to control the pest have progressed through the years from the use of trench barriers, wood or metal barriers, oil on water barriers, dusting with sodium arsenite, to the bait in use today. This bait consists of wheat bran impregnated with aldrin and broadcast in front of the migrating crickets by aircraft or ground equipment.

During fiscal year 1961, 62,050 acres were found infested in six states, as shown in the following table:

<u>STATE</u>	<u>ACRES INFESTED</u>	<u>STATE</u>	<u>ACRES INFESTED</u>
Colorado	200	Nevada	23,200
Idaho	7,000	Oregon	1,200
Montana	25,000	Wyoming	5,450

Inasmuch as small bands of crickets are now controlled when found, large-scale operations are not as prevalent as in earlier years of cooperative control efforts. Only 2,665 acres required control during 1961, inasmuch as banding and migration failed to materialize on other infested areas. The area baited in 1961 was in Wyoming; and application was by aircraft.

Recent years of emphasis upon the importance of treating while the pest is still confined to the hatching areas is believed to be making an important contribution to the downward trend in the size of control operations required to combat this pest.

Peach Mosaic Disease

Peach mosaic is a serious disease of peaches. The disease also affects almond, apricot, nectarine, and plum. First recognized in Texas in 1931, it is now known to occur in the States of Arizona, Arkansas, California, Colorado, New Mexico, Oklahoma, Utah, and Texas. It is caused by a virus transmitted from diseased to healthy trees by a microscopic eriophyid mite (*Eriophyes insidiosus*). In the spring, newly formed leaves on affected trees become mottled, and short internodes develop, causing profuse branching. Malformed and bumpy fruit may also result. The commercial value of a severely infected planting may be destroyed in three to six years.

In order to check the spread of peach mosaic, nursery and budwood inspections are made and uniform state quarantines are enforced. With the exception of the States of Arizona and New Mexico, growers are legally required to remove all trees found to be infected. Current regulatory measures prohibit the movement of stone fruit nursery stock from Arizona and New Mexico. Detection surveys are also made for the disease in susceptible areas where it is not known to occur. The states, Federal Government, and industry cooperate in this program.

At one time, both California and Colorado each were known to have had approximately 30,000 infected trees. Those degrees of infestation have since been reduced to a very low level.

During 1961, 3,380,603 hosts were examined and only 919 hosts were found infected. The following table summarizes the results of peach mosaic inspection:

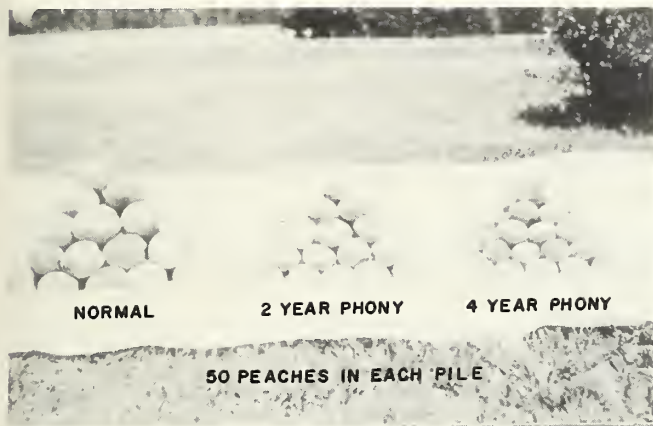
STATE	HOSTS EXAMINED	INFECTED	
		Properties	Hosts
Missouri	608,335	0	0
California	440,178	107	346
Colorado	858,471	200	503
Utah	121,135	20	40
Arkansas	596,109	0	0
Oklahoma	490,826	0	0
Texas	265,549	17	30

Phony Peach Disease

Phony peach disease was first observed at Marshallville, Georgia, about 1885. It is thought to be native to the United States. It now occurs in 12 states located east of and including Texas. It is considered as a serious threat to commercial peach production in Oklahoma, Georgia, South Carolina, the southeast parts of Arkansas and Missouri, eastern Texas, and northern Louisiana.

Several species of leafhoppers are known to transmit the virus which causes phony peach disease. The disease is considered serious only when the range of insect vectors overlaps the

area of peach production. Almond, nectarine, apricot, and plum are also affected. Trees are not killed outright, but the fruit becomes progressively smaller each year until production becomes unprofitable. Discovery that the disease is endemic in wild plums has led to efforts to eliminate plums in the vicinity of peach orchards.



Commercial production is rapidly reduced. Contrast disease free production pictured on the left with the production from a tree following four years of infestation by phony peach disease.

Since 1929, more than three million phony diseased trees have been eradicated by growers. Division personnel assist growers in inspecting peach orchards and other cultivated and wild hosts to define areas of infection. State agencies provide for the removal of infected trees, assist with inspection, and enforce quarantine regulations. A Federal quarantine was in effect regulating movement of peach nursery stock prior to 1934. Since then, regulations have been under a uniform state quarantine applied by the various states.

During fiscal year 1961, 7,219,931 host trees were examined in nine states, with 29,443 infected hosts found on 693 properties. The following chart depicts states in which examinations were made:

STATE	HOSTS EXAMINED	FOUND INFECTED	
		Properties	Hosts
Indiana	32,050	2	8
Missouri	67,870	4	11
Alabama	940,974	236	1,898
Arkansas	119,877	6	20
Georgia	3,558,295	312	19,785
Louisiana	170,391	46	684
Mississippi	56,485	29	6,618
South Carolina	2,048,970	48	350
Texas	225,019	10	69

Pink Bollworm and Wild Cotton

The pink bollworm (Pectinophora gossypiella) is one of the most destructive and widespread of cotton pests. It was described from India in 1843. In 1909, it was found in the Hawaiian Islands; in 1911, it was reported from Mexico. Infested seed from Mexico introduced the pest into the continental United States at Hearne, Texas, in 1917. From that point it has spread to Arizona, Arkansas, Louisiana, New Mexico, and throughout Oklahoma and Texas. It is reported to propagate on 38 plant species other than cotton in this country; of these, 26 have been found to carry resting larvae through the winter in seed pods. Okra and kenaf are probably next to cotton in the list of preferred host plants of the pink bollworm.

In India and Egypt the pink bollworm is reported as causing an average loss to cotton of 15 to 25 percent annually; while in 1949 to 1950, Brazil suffered 60 to 70 percent damage to cotton. In most of the infested areas of the United States, cultural and chemical control measures have kept damage at a much lower level. Damage by the pink bollworm is caused by larvae cutting the lint, either destroying it or reducing the grade by staining and shortening the lint, and by destroying the cottonseed.

The adult pink bollworm is a small brown nocturnal moth about 4/5 inch from tip to tip of extended wings. The female begins laying eggs a night or two after emergence and will lay about 200 eggs. Most of the eggs are laid on the base of maturing green bolls except early in the season when eggs are deposited on squares. The eggs hatch within four or five days. The larvae then bore into the boll or square. The mature larvae is about 1/2 inch long with a pinkish coloring. Summer brood larvae will complete their growth in eight to twelve days. After maturing, they cut out of the boll, drop to the ground, and pupate or hibernate, as environmental conditions dictate, in surface trash or in cracks in the soil. The pupal stage lasts eight to ten days in the summer, but is usually longer in the cooler weather of spring and fall.

Cool weather, lack of humidity, lack of food supply, or other unfavorable conditions may cause a large percentage of the larvae to go into a resting stage. This cycle, if entered into late in the season after cold weather begins, ordinarily lasts until the following spring when cotton is again fruiting. Larvae have been known to remain in hibernation for more than two years.

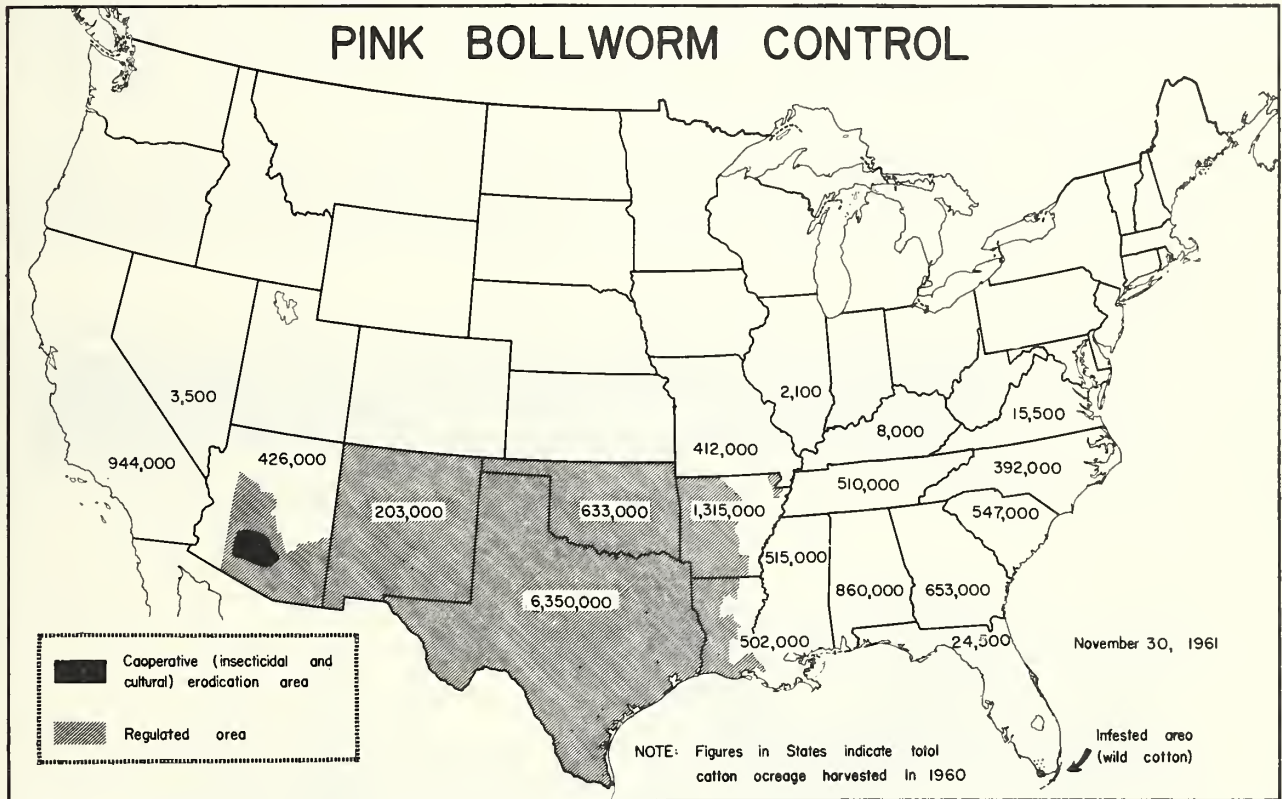
If dry weather is followed by considerable rain, many of the inactive larvae go into pupation and emerge as moths. Because of this, strong emphasis is given to cotton stalk and debris destruction so that the emerging moths will find nothing upon which to deposit their eggs.



Light trap used in surveying for the adult form of the pink bollworm.

Program activities of the Division and cooperating cotton-producing states include: (1) Prevention of spread by enforcing quarantine regulations on movement of cotton products from infested areas, (2) eradicating infestations on the eastern and western periphery of general infestation, (3) reducing populations in the generally infested area with cultural operations, and (4) surveys to detect new infestations.

Within the generally infested area, populations during the year were at their lowest in several years. Only nine pink bollworms were collected in Arkansas and Louisiana. Only one moth was trapped in the Arizona eradication area. In this latter area, 32,000 acres were treated with nine applications of insecticide for a cumulative total of 283,000 acres during the 1960 cotton season. During the 1961 cotton season, 11,000 acres were under treatment at the end of fiscal year 1961.



In cooperation with the Agricultural Engineering Research Division and the Entomology Research Division, personnel developed a device for recovering pink bollworm larvae from gin trash before it is exposed to the high temperatures now used in cotton gins in some parts of the country. Additional evaluation of this device will be conducted during the 1961 ginning season.

The Plant Pest Control Division continued in the active-cooperative pink bollworm program with the Defensa Agricola of the Mexican Government. This cooperation consists of surveys for detection of pink bollworm, application of field insecticide demonstrations, regulatory and control activities. Control procedures include the establishment of planting periods and stock destruction dates. Generally, pink bollworm populations in Mexico were lighter than in previous years, although some commercial damage to cotton was sustained in the Laguna area of the States of Coahuila and Durango.

Wild cotton, growing in several southern Florida counties, is a host of the pink bollworm. The wild cotton eradication program is conducted to eliminate that source of infestation to the commercial cotton producing areas in the Southeastern States. During the 1961 fiscal year, 6,645 wild cotton plants were destroyed. DDT and Sevin were applied at regular intervals to infested hibiscus plantings in Florida. Of the 10,594 acres surveyed in Florida, two locations were found infested with pink bollworms, one in Monroe County, Florida, and one in dooryard cotton in southern Dade County.

Soybean Cyst Nematode

The soybean cyst nematode (Heterodera glycenes Ichinohe) is a new pest of soybeans in the United States. It may cause yellowing and stunting of the plants, a condition known as "yellow dwarf" in Japan, Korea, and China where the pest was known for a number of years prior to its being found in this country. The typical foliage symptoms of the disease may not appear when soybeans are grown in heavy fertile soil with plenty of moisture present. In areas of light, sandy soil, the disease often drastically reduces yields, and in severely infested fields may even destroy the entire crop.

In the United States, the nematode was first recognized in 1954 in New Hanover County, North Carolina. Subsequently, it has been found in nine additional counties in North Carolina, three counties in Virginia, in the upper Mississippi delta, in Arkansas, Kentucky, Illinois, Mississippi, Missouri, and Tennessee.

The soybean cyst nematode is a root parasite about 1/50 of an inch in length. Its limited host range includes common vetch, lespedeza, and white lupine, in addition to soybeans. It attaches itself to young roots and feeds upon the cell contents. The mature female lays part of her eggs externally, but keeps most of them within her body which develops into a brown, lemon-shaped, protective cyst. The eggs laid externally soon hatch, produce larvae, and start the life cycle again. Several generations may be produced in a single season. The eggs within the cyst hatch and attack plants the following season or they may remain dormant for several years.



Sign designed in cooperation with the Missouri Department of Agriculture. The purpose is to emphasize the hazard of moving soil from infested areas.

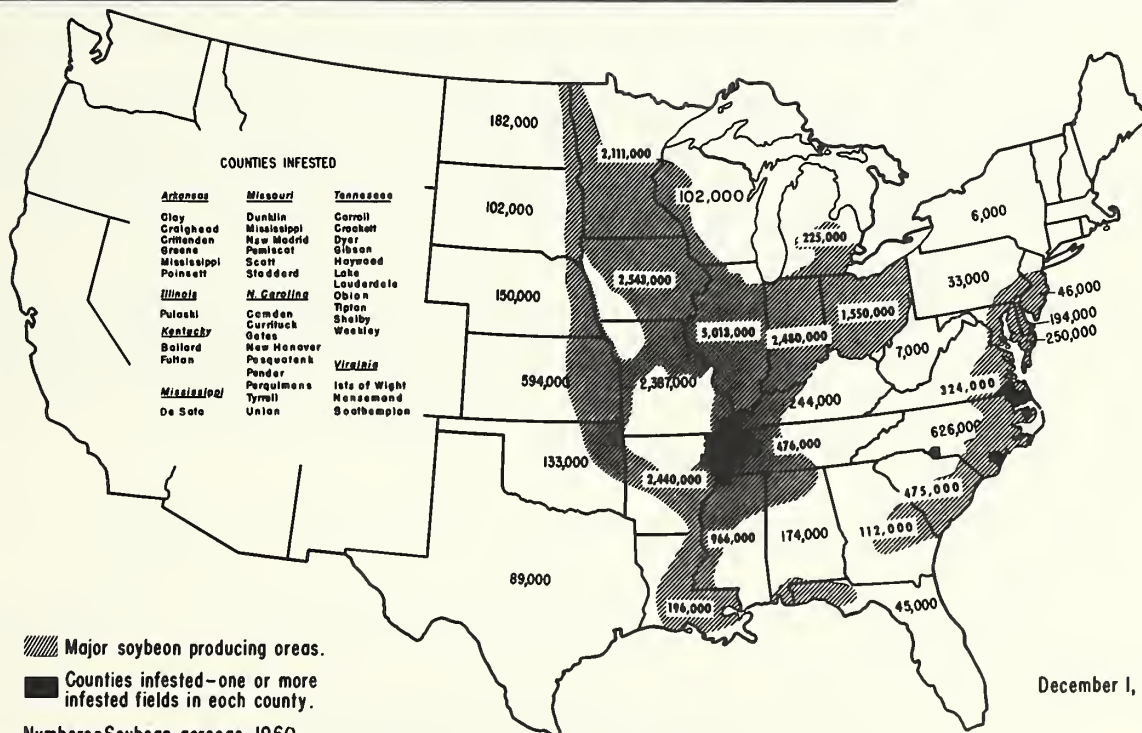
Laboratory examination of soil samples for the lemon-shaped cysts is the only reliable method for determining infestations.

In 1955, the soybean cyst nematode program was developed as a cooperative effort between the U.S. Department of Agriculture and the State agricultural agencies in North Carolina. Since then, the cooperative program has been extended to the other infested states. The primary objectives of the cooperative program are: (1) Surveys to determine the extent of infestations; (2) state and/or Federal quarantines to prevent spread to additional areas; and (3) investigations to find ways of dealing with the problem.

The current status of the soybean cyst nematode program may be briefly summarized as follows: (1) No satisfactory chemical treatment for eradication has been demonstrated; (2) crop rotations reduce nematode populations and resulting damage; (3) regulations restricting the movement of suspect commodities have been successful in preventing long-distance spread of the pest; and (4) progress has been made toward the development of soybean varieties resistant to damage by the pest.

During the 1961 fiscal year, infestations on 16,771 additional acres were verified from soil samples, making a total of 60,241 acres found infested in eight states since the beginning of the program. Since all fields are not sampled in localities of general infestation in the upper delta area, the total infestation is known to be considerably greater than the aggregate acreage of the fields from which cysts have been identified.

Soybean Cyst Nematode



Survey and Detection

A cooperative program to determine and report the abundance of insects and related plant pests of economic importance was organized on its present basis in 1952. National in scope, the activity is dependent upon cooperation with state agricultural agencies. General insect surveys, special situation surveys, and surveys specifically related to plant pest control regulatory and control activities are included in this segment of Division activity.

In 1950, the Civil Defense Administration requested the United States Department of Agriculture to utilize its facilities to develop a plan to combat the possible intentional introduction of insects and diseases harmful to livestock, crops, and forests. The following year, representatives of the Bureau of Entomology and Plant Quarantine contacted the principal state agricultural agencies and discussed the advisability of developing a survey program, by establishing "clearing houses" for screening insect specimens, preparing reports in each state, and furnishing the information to the Bureau for a weekly national report. Their immediate interest led to the development of the present cooperative survey program. This new program was guided by the suggestions of a survey advisory committee appointed by the Entomological Society of America. The comprehensive effort of state and Federal agencies to promote the nationwide collection, reporting, and forecasting of insect abundance was designed to: (1) Assist farmers to more adequately protect their crops from insect attack; (2) supply current information on insect activity to agricultural workers; (3) aid and assure releases being published in the Cooperative Economic Insect Report; (4) develop workable insect pest forecasting service; (5) estimate losses by insects; (6) aid in determining where insecticide supplies and equipment are needed; (7) develop nationwide uniformity in reporting insect conditions; (8) maintain records on occurrence of domestic and foreign economic insects; and (9) provide a nationwide organization for biological warfare defense as it relates to insects.

Since 1959, state regulatory agencies, the regional and national plant boards, and the Plant Pest Control Division have encouraged accelerated detection programs within the Nation's border through utilizing the framework of the existing survey organization. Modern high speed transportation on land and sea and in the air, coupled with the increased movement of people and products, has currently increased the possibility of new pest introduction into this country despite the safeguards exercised by the Plant Quarantine Division. The major objective of the survey and detection program is to reduce the interval between establishment and discovery of any new pest, or the movement of an established pest to a new area. The early detection, prompt reporting, and identification of pests is extremely valuable as a prelude to any eradication or suppression program.

Action to strengthen the detection effort included improved insect identification services, and increased emphasis on the importance of encouraging every available qualified person to participate. Visual aids and literature have been developed to promote the program. In addition, a series of information sheets on "Insects Not Known to Occur in the United States" was developed, published in the weekly report. Later, upon request, 1,600 copies in book form were made available to cooperators and others interested.

The Cooperative Economic Insect Report is the approved publication for the distribution of information to cooperators. Insect information for this weekly report is transmitted to Washington through the 50 state clearing houses by many cooperators in entomology and related agricultural fields. Among the agencies whose employees provide assistance are the Extension Services, the Experiment Stations, state regulatory agencies, Plant Pest Control Division employees, other Federal agencies, commercial organizations, and many allied agricultural workers. Some of the state programs operate entirely on a voluntary reporting basis, while others employ survey entomologists who aid with the program and are jointly paid by the state

and the Division in accordance with a written cooperative agreement. The Division cooperates closely with Federal taxonomists of the Entomology Research Division and the National Museum.

Information on the distribution of economic insects gleaned from the weekly reports is regularly added to the permanent insect files. This valuable reference file, one of the best in the world, contains over one-half million notes on some 25,000 domestic and 20,000 foreign insect species.

During fiscal year 1961, a total of 1,598 weekly reports were received from the cooperating states in addition to other special reports. Each week approximately 3,200 weekly Division report copies were mailed to cooperators and other interested people. Reports on special surveys, mentioned elsewhere in this report, other service surveys, maps, insect losses, light trap collections, the "Status of More Important Insect Pests," "Insects Not Known to Occur in the United States," summaries of insect conditions in the United States and in foreign countries were released during the year.

Over a period of two years, this work has been presented to hundreds of cooperators by means of insect detection workshops held throughout the country. During the 1961 fiscal year, 14 insect detection workshops were held, which resulted in 558 cooperating personnel from 16 states being briefed on such subjects as survey methods, insect identification, including methods of processing and submitting specimens, and where to send them for screening and final action. Information on foreign insect pests and introduced pests presently confined to limited areas of the country was also reviewed.

Sweetpotato Weevil

The sweetpotato weevil (Cylas formicarius elegantulus) is a native of the Orient. It is presently distributed throughout the world in the tropical and semitropical regions. It was first recorded in the United States from Louisiana in 1875, and now occurs in the sweetpotato producing areas of Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, and Texas.

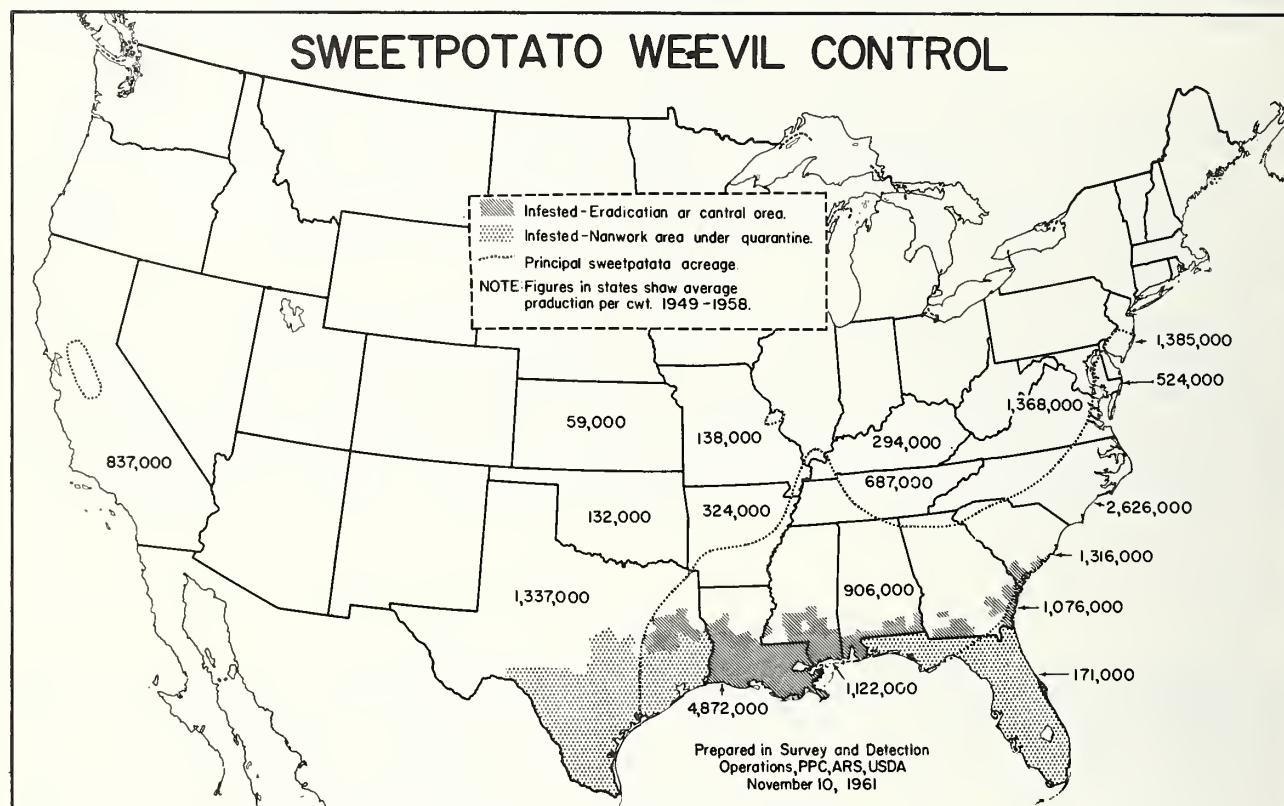
The sweetpotato weevil is restricted for food to the sweetpotato and closely related plants in the convolvulus family. Members of this family, such as beach vine or beach morning-glory (Ipomoea pes-caprae), are indigenous to all sweetpotato growing areas. Most sweetpotato weevil damage is caused by the larvae as they feed on the sweetpotato roots. The most damaging infestations occur in areas where winters are not cold enough to destroy all vegetation on which the weevil feeds. In these areas, the weevil can breed throughout the year, and a life cycle can be completed in five or six weeks. The adult weevil is a snout-beetle of ant-like appearance about 1/4 inch long, with metallic dark-blue elytra, red thorax, and blue head. The larva, when full grown, is white with pale brown head and dark brown mouth parts. The length is about 3/8 inch.

This weevil is the most destructive insect pest attacking the sweetpotato crop; damage in the field can be as high as 20 to 50 percent with additional damage occurring later in storage. Infested potatoes have a bitter taste and are unfit for human and animal food. Annual damage from this pest is about 12 percent of the value of the crop, or approximately \$5 million.

To prevent further spread and to control this serious sweetpotato pest, the United States has a quarantine against the importation of sweetpotatoes. The Plant Pest Control Division cooperates with the states in the inspection, control, and prevention of spread of the weevil.

Control is dependent upon strict cultural practices, storage in a disinfested area, and one or two applications of two percent dieldrin to the growing plants.

During the 1961 fiscal year, 28,112 properties were inspected; 5,730 acres and 543,224 bushels of sweetpotatoes were treated with pesticides. In addition, there were 460 acres treated with herbicides to destroy native host plants.



White-Fringed Beetle

The white-fringed beetle (*Graphognathus* spp.) was first found in the United States in Okaloosa County, Florida, in 1936. Introduction was probably from South America, where it occurs in Argentina, Brazil, Chile, and Uruguay. The pest is known to exist in eleven southern states. It was reported for the first time in Kentucky and Virginia during fiscal year 1961. Only one beetle was found in Fulton County, Kentucky, just across the northern Tennessee line, and one small infestation was found in Greenville County, Virginia, just across the North Carolina State line.

All adult white-fringed beetles are wingless females. They are dark gray, about 7/16 inch long, and have a white band along the outer edge of the body. Emergence of the beetles from the soil begins in May and continues into October. A few days after emergence, the beetles begin laying eggs, cementing them in small masses to plant stems, sticks, debris, or soil particles. Adults are known to feed on more than 170 species of plants, including field, garden, and truck crops, ornamental shrubs, flowers, and weeds. The yellowish-white larvae, which reach a length of about 1/2 inch, enter the soil soon after hatching and feed on roots and underground stems of plants. Larvae have been observed feeding on 240 species, including corn, cotton, lespedeza, lupine, oats, peaches, peanuts, pecans, potatoes, soybeans, strawberries, sweetpotatoes, tobacco, tung, velvetbeans, and willow.

Heavy damage to field crops, ranging as high as 70 percent, has occurred in the areas where the pest was originally found. In some fields, a high percent of the plants have been killed in areas ranging from a few square yards to large acreages. Even light populations can seriously damage truck crops.

White-fringed beetle detection surveys are conducted each year to determine if infestations exist in other states and to detect extensions from the known infested areas. Inspections for adult white-fringed beetles may be made from late May to mid-October. Larval surveys are most effectively conducted in the early spring when young vegetation is most susceptible to injury and plants show abnormal symptoms, such as wilting or dying.



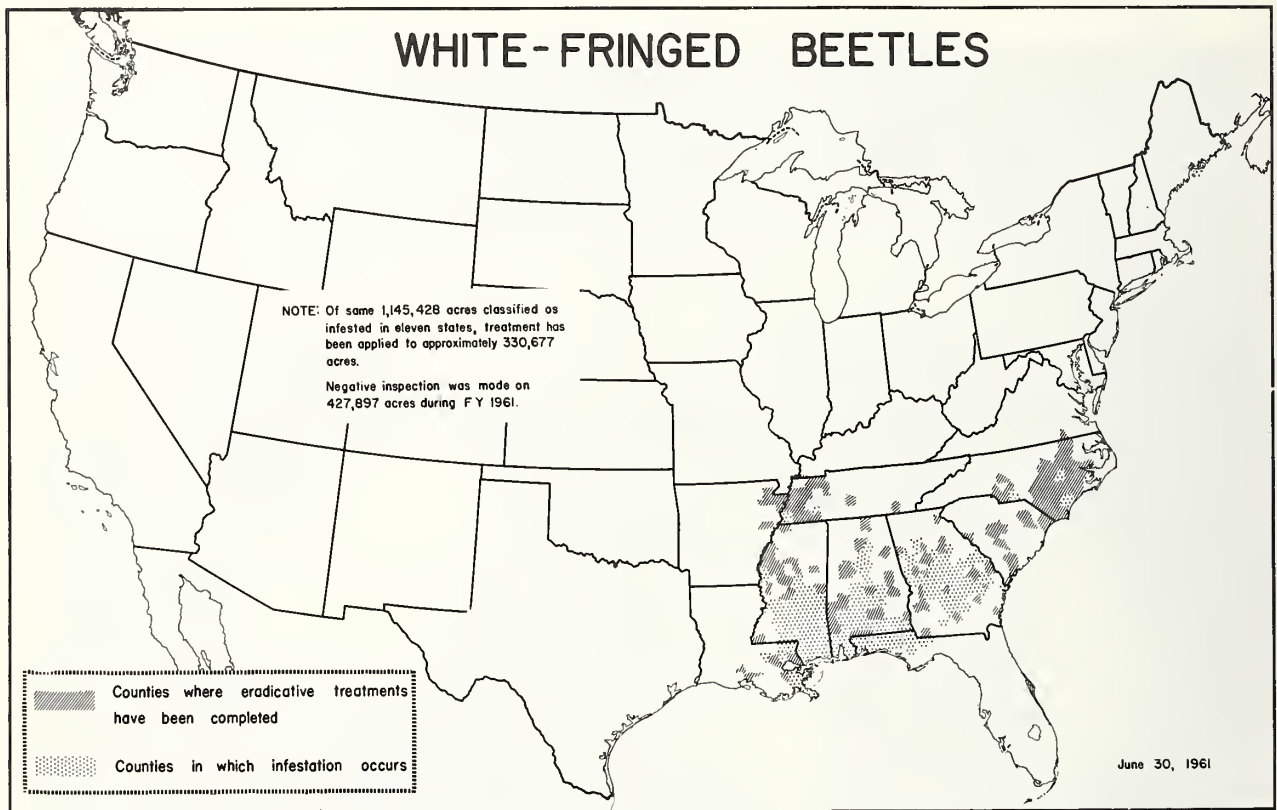
Damage to sweetpotato tubers by white-fringed beetle larvae.

The movement of nursery stock, soil, and other regulated articles is strictly carried out under Federal and supporting state quarantines. The rigid regulation of this pest is required because only female beetles occur, each fully capable of producing fertile eggs. A new infestation may be started by the transportation to a noninfested area of a single adult, larvae, or other stage of the insect.

The current control and eradication program is based on soil treatments with chlorinated hydrocarbons, such as aldrin, DDT, dieldrin, or chlordane. These insecticides are very

effective in eradicating white-fringed beetles when properly applied at the approved rate. Good progress is being made on the eradication program in many of the infested states. All known infested acreage has been treated in Kentucky, South Carolina, and Virginia. The infestation in New Jersey has been eradicated.

Known white-fringed beetle infested acres in the United States total approximately 1,144,471 acres, 177,135 of which were found infested during the 1961 fiscal year. During the fiscal year, soil treatments were applied to more than 62,000 acres. The map below shows the distribution of white-fringed beetles in the United States:



Witchweed

Witchweed (*Striga asiatica*), a parasitic flowering plant, was discovered for the first time in the Western Hemisphere late in the summer of 1956. It was found seriously damaging corn in eight adjoining counties of North Carolina and South Carolina. Although a new pest in the United States, witchweed is an old and widespread problem in the tropics and subtropics of the Old World. It is present in large areas of Asia, Africa, and Australia where it was known to exist in 1790. It was recognized to be a serious parasitic weed in South Africa as early as 1900.

Witchweed is a serious pest of corn, sorghum, and sugar cane, as well as 60 other species of the grass and sedge families, including barley, oats, rice, and wheat. The roots of corn, sorghum, sugar cane, Sudan grass, and crab grass stimulate the germination of witchweed seed and then are parasitized by the pest. Other crops such as castor beans, cowpeas, peanuts, soybeans, and sunflowers stimulate seed germination but are not parasitized.

The plant is identified by its small flowers, which are usually brick-red or scarlet. Occasionally yellow or almost white blossoms appear. The leaves are slightly hairy. The plants rarely grow more than eight to ten inches high, but may occasionally reach a height of 18 inches. The weed develops underground for six weeks to two months. It is during this period that the principal damage is done to the host. After vegetative parts appear above ground, witchweed develops like any other plant but still depends upon the host for water and soil nutrients. The plant thrives on a wide range of soil types but seems to prefer a light sandy soil. Symptoms of infestation include severe wilting, stunting, and yellowing of the host plant. Seed will mature in a month or less after flowering. Thereafter, flowering and fruiting are continuous until the plant dies.

Survey for witchweed begins in early June, or as soon as evidence of infestation is apparent, and continues until frost. The first sign of witchweed is the sudden wilting of corn plants. After the pest appears above ground, surveys can be made rapidly, because of the striking appearance of witchweed blooms.



Witchweed attacks the roots of corn plants. The more intense the witchweed infestation the more severe the damage to the corn.

A Federal quarantine became effective September 6, 1957. It applies to all infested areas and all crops and commodities produced in or moved out of witchweed infested areas. As of June 30, 1961; the quarantine was in effect in 16 southeastern counties in North Carolina, and eight adjacent counties in South Carolina. Regulated articles include soil, underground parts of plants, hay and other fodder, seed cotton, tobacco, peanuts, ear corn, soybeans, used farm

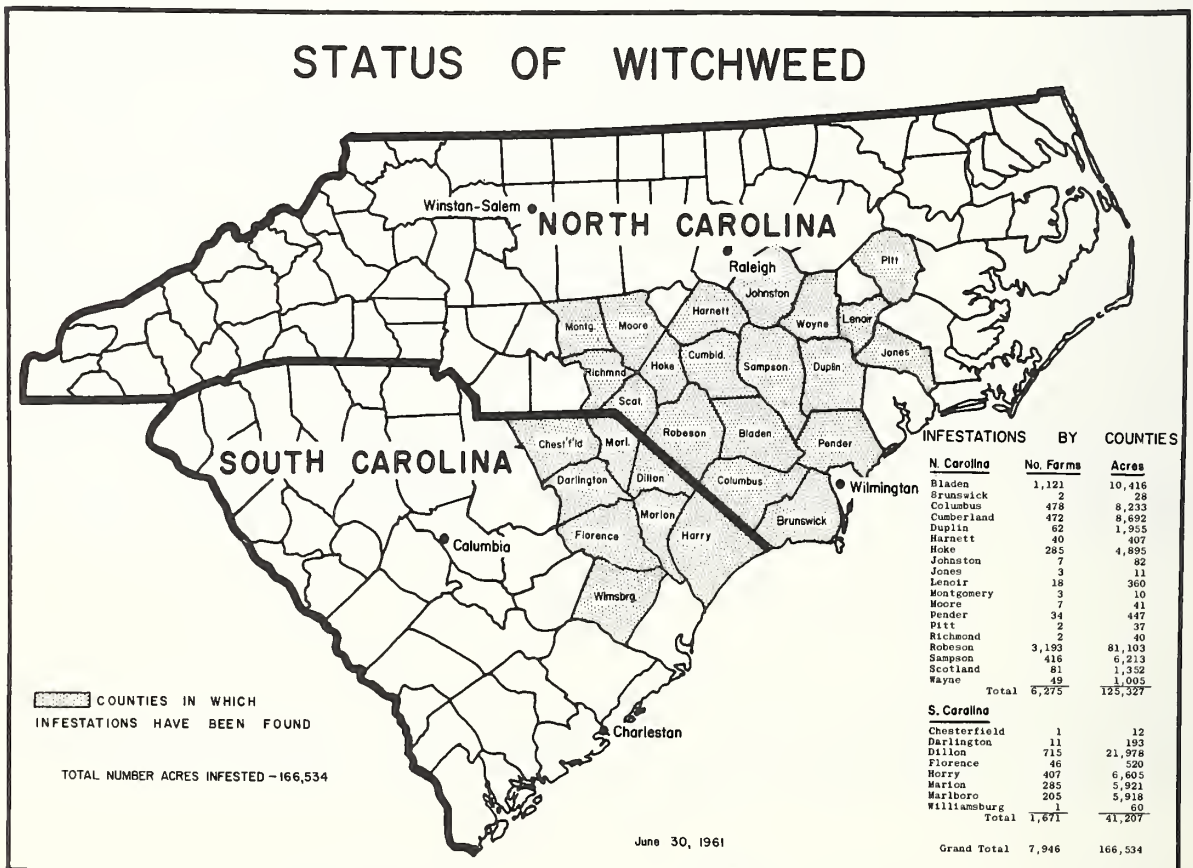
and construction equipment, and farm products containers. Harvesting and handling procedures and treatments have been devised to preclude contamination of regulated articles.

Activities associated with the marketing of crops in the infested areas have been carefully studied. As a result, sanitation practices are rigidly enforced to prevent spread of the pest by activities associated with farm-to-market movement.

The long-range objective of the witchweed program is complete eradication. All known infested land is included in the program. The herbicide 2, 4-D is applied at timely intervals to destroy witchweed plants prior to seed production. This method is very effective and is used on idle land and in crops such as corn, sugar cane, and sorghum that are tolerant to 2, 4-D. Cultural methods are used on crops that will not tolerate 2, 4-D. When the susceptible crop is harvested, chemical control is initiated.

Many new herbicides were tested in cooperation with the Crops Research Division. Special emphasis was placed on preplanting and pre-emergence treatments required for suppression of witchweed. Progress was made in developing a procedure for producing corn exudate to be used in studies designed to isolate and identify the witchweed seed germination stimulation factor.

In cooperation with the Extension Service, an extensive program was conducted to acquaint farmers, agricultural students, 4-H clubs, and other interested groups with the witchweed problem. Many new infested fields were reported by people as a result of this cooperative program with the Extension Service.



PESTICIDES REGULATION BRANCH ACTIVITIES
FISCAL YEAR 1961

The Federal Insecticide, Fungicide, and Rodenticide Act regulates economic poisons which include insecticides, fungicides, disinfectants, sanitizers, herbicides, rodenticides, nematocides, plant regulators, defoliants, and desiccants. These products are required to be properly labeled and registered with the Pesticides Regulation Branch prior to entry into interstate commerce.

During the 1961 fiscal year, 5,383 new products were registered. This is an increase of 14.4 percent over the previous year. There were 4,899 amended labels registered during the year. These amendments were primarily new uses for previously registered products. There were 51,726 products registered with the Branch by the close of fiscal year 1961; and in addition, some 48,766 distributor brands have been recorded. This makes slightly more than 100,000 pesticide products currently registered for interstate shipment.

During the year, 1,658 products collected from interstate shipments were examined. Three hundred and twenty-two were found to be in violation of the Act, requiring the issuance of 263 notices of violation and 59 seizures. This represents an increase of approximately 13 percent in notices of violation and 64 percent in seizures. There were 111 violations corrected through correspondence.

Under the responsibilities assigned the Branch in connection with Pesticide Chemicals Amendment to the Food, Drug, and Cosmetic Act, 34 certifications of usefulness were issued for chemicals for which tolerances or exemptions were requested.

Active cooperation with state pesticide regulatory officials has continued. The Executive Committee of the Association of American Pest Control Officials met with Branch representatives for a four-day period in May to discuss registration and enforcement problems. Five members of the Branch serve on committees of this Association.

Laboratory facilities at the Beltsville, Maryland, station were expanded and improved to accommodate the testing of fungicides, nematocides, plant regulators, and algacides. Construction of a new Bacteriological Laboratory building was started, with completion expected by January 1962.

The special investigation on hospital germicides initiated early in 1958 was terminated in June 1961 and a report of the findings published. These studies provide information which is being used to improve the enforcement program for this specific class of products.

Although the Chemistry Laboratories of the Pesticides Regulation Branch are primarily concerned with the analysis of official samples collected by investigators in connection with the enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act, they have performed analytical work for the Division, Federal agencies, various states and some foreign governments. During the past fiscal year, 208 such samples were analyzed. The Chemistry Section also maintains close liaison with various industry groups who are concerned with the development of accurate analytical methods for pesticide chemicals.

Studies on official samples of wood preservatives, with particular reference to those labeled with directions for use application by farmer or homeowner, is being continued to acquire information to counter false and misleading claims regarding long term protection of treated items.

In addition to the testing of official samples of insecticides, studies have been made on the phytotoxicity of home garden pressurized sprays, on methods for evaluating residual roach sprays, and on the standardization of testing procedures for mothproofing compounds. Certain laboratory studies have also been made on naphthalene and paradichlorobenzene to assist in the preparation of an interpretation of the regulations regarding the labeling of these materials as household fumigants.

An Interpretation of the Regulations regarding residual household insecticides was published during the year. This is collateral to the Interpretation dealing with nonresidual household insecticides previously issued. These Interpretations will be of great value in maintaining uniform labeling policies on household insecticides.

The "USDA Summary of Registered Agricultural Pesticide Chemical Uses" was issued in March 1961 to replace the 1957 "Summary of Certain Agricultural Pesticide Chemical Uses." The new edition consists of registered patterns of use of pesticides on food or feed crops. The summary, when issued, listed registered uses for 344 pesticides representing 5,486 patterns of use. Two supplements were issued during the year and additional ones will be issued periodically as new uses are registered.

PESTICIDE REGISTRATION




BRAND NAME

5% D.D.T.-60% SULPHUR DUST
FOR CONTROL OF CERTAIN INSECTS INFESTING
VEGETABLE AND FIELD CROPS

ACTIVE INGREDIENTS
Dichloro Diphenyl Trichloroethane (DDT).....5% Min
Sulphur.....60% Min

INERT INGREDIENTS.....35% Max
Reg. Patent No. 00000

NET WEIGHT 50 POUNDS

BRAND NAME D.D.T.-60% SULPHUR DUST is formulated especially for use on vegetable and field crops, for control of certain insects infesting vegetable and field crops.

CAUTION: Keep away from children, domestic animals and food-stuffs.

NOTICE: Having no control over the application of this product, seller makes no claim for its use.

JOHN DOE CHEMICAL CORPORATION Anytown, U.S.A.

A LABEL MUST SHOW :

● Brand Name

● Ingredients

● Net Contents

● Directions for Use

● Precautions

● Mfr's. Name, Address

FOREIGN TECHNICAL ASSISTANCE PROGRAMS

Regional Insect Control Project--The Plant Pest Control Division continued services in connection with the planning and implementation of insect control programs administered by ICA in Near East and African countries. This activity is conducted under the terms of a special agreement between the Agricultural Research Service and the International Cooperation Administration, dated February 18, 1954.

Personnel attached to the Regional Insect Control Project have been recruited largely from Division rolls and assigned to overseas U. S. Operation Mission posts. The various programs are administered by the Division through its Regional Headquarters office in Beirut, Lebanon. Technicians maintain close cooperative working relations with Mission personnel and the host governments' Departments of Plant Protection. This work continues to fill an important need in U. S. and international foreign cooperative programs.

The major objectives of this Regional Insect Control Project are: (1) To assist the United States Operations Missions of ICA in their efforts to aid the governments of cooperating countries in the development and direction of practical control programs against the more important insect pests; (2) to maintain facilities and services for a coordinated locust control program primarily in the African countries; (3) to train nationals in aerial and ground application of pesticides and in techniques covering many phases of plant protection; (4) to assist in the development and organization of plant quarantine and insect survey programs; and (5) to aid the U. S. Operations Missions in developing coordinated insect control programs in the various countries and to assist in the coordination of insect control activities involving cooperation with the Food and Agriculture Organization and the Central Treaty Organization.

Technical assistance under the Regional Insect Control Project was extended to 14 countries of the Near East and Africa in the specialized fields of desert locust control, plant quarantine, insect survey, aerial spraying operations, and fumigation. Although activities were limited largely to seven countries where entomologists are stationed permanently, technical advice or assistance was given to the other countries of the region by members of the regional staff.

Desert Locust Control--In view of greater emphasis being placed on control of locusts in primary breeding areas and the importance to the economy of many developing nations of Africa, RICP personnel presented to ICA/W plans for an expanded program in the area. During the same period it was agreed to increase the number of personnel to handle the additional work. Since implementation of the approved expanded project is dependent upon ICA appropriations, no noticeable increase in operations is expected until the latter half of fiscal year 1962.

Major aerial control operations this year were extended to the governments of Ethiopia and Libya.

Upon request of the government of Morocco, the coordinator of RICP visited that country in July 1960 for the purpose of reviewing the technical and economic aspects of its locust program. His report and recommendations for improvement were well received.

The First African Pest Control Seminar, organized and conducted by RICP in cooperation with the International Cooperation Administration, was held in Tunis, Tunisia, January 25-February 3, 1961. Delegates from seven countries were in attendance. Subject matter panel discussions were held on locust control, pests of fruit and vegetables, cereal and stored products pests, and insects of fiber crops. Other topics included the use of aircraft in agriculture, insect survey, plant quarantine, and training of plant protection personnel. The seminar was considered

outstanding from the point of view of the interest shown in all topics discussed, the active participation of delegates, and their desire to hold future meetings.

Insect Survey--With the assignment of a full-time insect survey specialist to the Beirut office in March 1961, the work of insect survey was greatly enhanced. Plans immediately got under way for the initiation of a comprehensive accumulation of information on the destructive insects of the Regional Insect Control area. Survey assistance was requested by the governments of Iran and Turkey. As a result, the survey specialist attended the Plant Quarantine Customs conference sponsored by CENTRO in Istanbul, Turkey, May 8-12, 1961, where he discussed the relationship of survey and quarantine in the United States, after devoting one session to "Survey--Basis for Quarantine Legislation." Insect survey work in Iran was reviewed and attention devoted to its organization and operational procedures.

A cotton insect survey was conducted in Yemen at the request of the Yemen government.

Plant Quarantine activities showed a marked increase over the past year. Work on the organization and planning of plant quarantine sections, methods of treatment for plant pests in import and export commodities, appraisal for pest risk in carriers and in imports and exports at ports of entry, plans for construction of facilities for inspection and treatment, training and dissemination of information, all characterize the activities related to plant quarantine assistance during the year.

The plant quarantine specialist served as co-chairman to the second CENTRO Plant Quarantine Customs Meeting held in Istanbul, Turkey, after making all preliminary arrangements for the meeting, including agenda and facilities.

A study was made of the Turkish Plant Quarantine Service through visits and inspection of facilities. Recommendations to the Turkish government stressed organization, training of personnel in Western countries, need for plant pest survey, improved treatment facilities, and operation techniques.

International Cooperation with Food and Agriculture Organization and the Central Treaty Organization--RICP personnel served in important capacities as U.S. representatives to international meetings on locust control and plant quarantine. Special attention was given to cooperative work involving the CENTRO countries of Pakistan, Iran, and Turkey on revision of plant quarantine rules and regulations, construction of treatment facilities, increased insect surveys, and compilation of data on pests of these countries.

SPECIAL SURVEYS

Beet Leafhopper

The beet leafhopper (Circulifer tenellus (Baker)) is a serious menace to sugar beets, and a pest of beans, tomatoes, and numerous other crops in the western part of the United States. It transmits a virus, the causal agent of a destructive disease known as curly top. This insect breeds principally in southern portions of Arizona, California, New Mexico, and southwestern Texas during the winter months and moves into the more northerly states as the season progress develops. It infests any susceptible crop in its path, thus crops nearest the breeding grounds are most heavily infested and most seriously affected by curly top. The virus survives the winter in the leafhopper and some winter host plants.

The beet leafhopper, about 1/8 inch long, is wedge-shaped and gray to greenish in color. The head is short, rounded, and the wings extend beyond the abdomen. The tube of the sucking mouth parts extends backward between the second pair of legs. In flight, it appears almost white, thus incorrectly it is widely known as the white fly. The fall-fertilized females live over until spring, chiefly in uncultivated areas that support suitable host plants. Egg laying is concurrent with host plant growth in the spring. The eggs are deposited in the plant tissue. The nymphs feed by sucking the plant juices. Usually, five molts take place in the three to six weeks required for nymphal development. The species breed continuously during the warm months. The adults are dispersed by wind.

The Plant Pest Control Division assumes the primary responsibility for conducting surveys necessary to provide annual information on the status of this pest. This activity is based on research conducted by the Entomology Research Division. Surveys start in the southernmost areas in February, when the overwintering insects become active and proceed northward. The preliminary survey is followed later in the summer by two or three additional observations made in the affected northern states by state personnel.

The Division is cooperatively involved with several state and Federal agencies interested in a leafhopper control activity on Federal lands. The purpose is to reduce buildup of the pest on breeding grounds bordering susceptible agricultural crops, principally beans and sugar beets.

Upon completion of each survey, the findings, along with a brief analysis and forecast, are released through state cooperating agencies to inform agricultural interests of the potential leafhopper threat to crops. The survey results are also published in the Division's Cooperative Economic Insect Report.

Early season surveys in fiscal year 1961 produced a wide range of outlook information. In Colorado, Kansas, New Mexico, and Texas host plant conditions generally ranged from excellent in the south to poor farther north, with beet leafhopper populations being low except in some areas in Texas. In the El Paso Valley, adult populations were the highest ever recorded. West of the Rocky Mountains, host plant cover for beet leafhopper was poor in the southern breeding areas and the vector populations remained low. This indicates a probable light movement of the beet leafhopper from the southern desert breeding areas during the 1961 crop season. The overall outlook suggests a favorable year for crop production in leafhopper susceptible areas.

Boll Weevil

Surveys to determine winter survival of the boll weevil are conducted in a number of states in cooperation with the Entomology Research Division and state agencies. Division personnel assist with the collection of the samples. The information obtained from the survey is made available to state and Federal agencies for release to the public. It is also published in the Cooperative Economic Insect Report to forewarn them of the potential boll weevil infestation.

Counts are made in the fall soon after the weevils have entered hibernation and again in the spring before they emerge from winter quarters. A standard sample is two square yards of surface woods trash taken from the edge of a field where cotton was grown the previous season.

In comparison with the previous year, the 1961 spring survival of hibernating weevils increased in Mississippi and Tennessee, as well as in both the Coastal Plain and Piedmont areas of North Carolina and South Carolina. In Louisiana, Texas, and south central South Carolina, there was a decrease from that of the preceding year.

Hall Scale

Hall scale (*Nilotaspis halli*) is common throughout the Middle East. It was found in the Western Hemisphere in 1934, infesting stone fruits in the experimental plantings of the U.S. Plant Introduction Garden at Chico, California. Immediately thereafter, the California State Department of Agriculture eradicated the infestation, but the scale again appeared in the Garden in 1940, and from there it spread to a nearby commercial orchard. Since 1941, the State of California and the U.S. Department of Agriculture have cooperated in the effort to eradicate the pest. This was followed by extensive surveys in California that revealed a total of eight localized infestations in the vicinities of Chico and Oroville in Butte County and at Davis in Yolo County, the last infestation being discovered June 15, 1956.

The young crawlers are found in all parts of the host. Many of the crawlers, especially the females, settle in protected places, such as deep crevices in wood, and under loose bark and bud scales, making inspection and control difficult. Nearly 2,000 scales found on one almond hull emphasizes the intensity of infestation. Peaches, nectarines, plums, and prunes are also subject to severe infestation. One and a partial second generation occur between the time the first oval, pale yellow crawlers emerge in late March and the middle of October when the scale is found on all parts of the host. The scale damages current tree growth, malforms fruit, and causes fruit losses of as much as 25 percent.

Since the discovery of Hall scale in California, surveys have been made each year in suspect areas. State regulations concerning the movement of plant material have been effective in preventing spread of the pest. Eradicative measures include host removal or three successive fumigations with hydrocyanic acid gas (HCN) under gastight tents.

In May 1958, inspections for Hall scale were made on locations in Arkansas, Florida, North Carolina, Oklahoma, South Carolina, and Tennessee where host material had been shipped from the infested area. Inspections also included the U.S. Plant Introduction Garden at Cocoanut Grove, Florida.

Over a period of 21 years, this program required the inspection of 1,095,498 hosts and the fumigation or destruction of 48,946 infested host plants. No infestations were found in fiscal years 1956 through 1960.

Surveys this fiscal year, though greatly reduced, were designed to include a few remaining danger areas that might be supporting undiscovered infestations and locations adjoining previously infested hosts that had been removed. These final roundup surveys in Butte County, California, were completed on December 31, 1960, without locating any infestations. Henceforth, the area will be kept under surveillance by inspectors as they proceed with other assignments.

Hoja Blanca

Hoja blanca, or "white leaf," is a serious disease of rice. It is a virus transmitted by a planthopper species known as the rice delphacid, Sogatia orizicola. Identified only in the Western Hemisphere, it appears to be a rice plant disease native to the Western World. First attracting attention in Panama in 1952, the disease has spread rapidly throughout Central America and northern South America and is now known to occur in British Honduras, Colombia, Costa Rica, Cuba, the Dominican Republic, El Salvador, Guatemala, Honduras, Panama, Surinam, Venezuela, and Mexico.

Hoja blanca was first found in the United States in Palm Beach County, Florida, in the fall of 1957. The disease and the vector were found at the Everglades Experiment Station and nearby Belle Glade in three fields comprising 311 acres. State and Federal crop protection specialists soon recognized its potential threat to the Nation's one and one-half million acre rice crop valued annually at \$225,000,000. Immediate arrangements were made for the destruction of the infested rice plantings and malathion sprays were applied to some 2,100 acres of the infested fields and their environs to destroy suspected insect vectors. Infected fields were plowed under and growers agreed no rice would be planted the following year. Detection surveys on 1,700 acres in 16 Florida counties were negative through June 30, 1958. In the late summer of 1958, additional intensive detection surveys were conducted in Arkansas, Florida, Louisiana, Mississippi, and Texas in 40,079 acres of rice on 797 properties. Infestations were found on two farms on the Gulf Coast in Hancock County, Mississippi. Chemical and cultural controls were applied to 3,055 acres in Florida and Mississippi the following year.

During the 1960 fiscal year, intensive vector and disease surveys covered 453,748 acres in all of the principle rice growing areas in eight states. As a result, hoja blanca was found on 42 properties containing 7,519 acres in 14 parishes of Louisiana and one small property in the Harrison County, Mississippi, area. In Louisiana, the disease was found in 11 parishes with only the vector being found in the other three parishes. During the same period, multiple applications of insecticides were applied to 32,410 acres in Louisiana to destroy the vector and prevent further spread. In addition, specimens of Sogatia cubana were collected in Louisiana for the first time. It had previously been found in Florida. Research indicated that this species of planthopper may transmit hoja blanca from rice to certain grasses. It does not transmit the disease from rice to rice. Numerous specimens of Sogatia furcifera, a closely related species of no importance as a vector, have been collected in the course of survey activity.

Industry cooperation with the program since 1957 has been excellent. Many growers in important rice producing areas planted disease resistant rice in 1960. Agronomists are hopeful the seed increase from the new variety, Gulfrose, will be available for planting in 1961. Surveys continued in the fall of 1960 in the principle rice growing areas and some border areas which included Arkansas, Florida, Georgia, Louisiana, Mississippi, and South Carolina. These surveys covered 345,179 acres on 2,591 properties in 86 counties and parishes with negative results. The search included all areas previously known to be infested and treated. Since 1957, surveys have covered 840,732 acres on 7,018 properties. Control measures have been applied to 41,304 acres on 52 properties.

Mediterranean Fruit Fly

The Mediterranean fruit fly (*Ceratitidis capitata*), occurring in many countries throughout the world, is one of the most destructive fruit pests known to man. It attacks more than 200 vegetable and fruit crops including most deciduous, subtropical, and tropical fruits that grow in the areas it infests. Often it is a more serious pest of some deciduous fruits, such as the peach, than of citrus. It has, on two occasions, become established in Florida and then eradicated, the first time in 1929 to 1930 and the second in 1956 to 1957. It continues to be a constant threat to United States citrus as demonstrated by frequent interceptions at ports of entry by Plant Quarantine personnel. Qualified entomologists believe once established, it could overwinter in southern California, Florida, and perhaps in the southern portions of other Gulf Coast States.

The adult female deposits from one to ten white elongated, elliptical eggs per puncture through the surface of the fruit. She may lay as many as 300 eggs during her lifetime. The eggs hatch into cream colored larvae which become about one-third inch in length when mature and feed on the pulp of the fruit. This usually causes the fruit to drop prematurely to the ground where the larvae leave it to pupate in the soil. Occasionally larvae pupate in other environments. At the end of the pupal period, adults emerge and reach maturity in four or five days. Bioclimatic studies show that ten generations of the fly will develop per year in the latitude of Orlando, Florida.

The adult fly is slightly smaller than a house fly. The thorax is a glistening black with characteristic mosaic pattern of yellowish white bands. The abdomen is yellowish with two silvery cross bands. The wings are banded and blotched with yellow, brown, and black, and are normally held in a drooping position.

Effective, dependable traps and synthetic lures have been developed for determining the presence of this fruit fly. These traps also serve for detecting several other very important fruit flies. Detection surveys have been carried on continuously in as many as 47 counties in Florida since the elimination of the last known Mediterranean fruit fly in 1957. In recent years, traps have also been exposed annually in Alabama, Arizona, Louisiana, Mississippi, South Carolina, and Texas.

During the 1961 fiscal year, 7,839 traps were exposed in Florida and about 666 in the other six states. In addition, State authorities in California utilized a large number of the multiple purpose traps. No Mediterranean fruit fly infestations were found in the course of these surveys.

The discovery of the fly in Costa Rica and Nicaragua poses a threat to the extensive fruit growing areas farther north and can provide a route for reinfestation in the United States. As a result, a cooperative Mediterranean fruit fly detection survey was planned and inaugurated in the Republic of Mexico during fiscal year 1961. The survey was conducted along the Mexico-Guatemala border in the Mexican State of Chiapas. The area around Tapachula and Comitán was well inspected and traps were exposed as far north as Tuxtla Gutierrez. Late in the year, some traps were placed in the area of Tampico in Tamaulipas and Veracruz in Veracruz. Some Guatemalan inspectors were trained in Mexico in order that they might conduct surveys in Guatemala. A maximum of 1,848 traps were operated before the close of the fiscal year, and more than 15,000 trap inspections failed to reveal any Mediterranean fruit fly infestations in the Republic of Mexico.

Potato Psyllid

The potato psyllid (Paratrioza cockerelli) is a serious insect enemy of potatoes and tomatoes in outbreak years. The psyllid nymphs, while feeding on potato plants, transmit the causal agent of a destructive disease called psyllid yellows which reduces yield and quality. In severe attacks, plants are killed. Outbreaks have occurred periodically since 1911 and some injury has been caused every year.

The adult psyllid, about one-tenth of an inch in length, is a clear-winged insect resembling a miniature cicada. The adult, light green when newly emerged, becomes black with white markings after two or three days, thus giving it a gray appearance. These white markings are distinguishing characteristics of the psyllid, particularly the broad, transverse white band on the first abdominal segment and the inverted V-shaped white markings on the last abdominal segment. The adult is very active. The egg, about 1/32 of an inch long, is oval and bright yellow to orange and one end is prolonged into a stalk by which it is attached to the edge or underside of the leaves in the upper part of the plant. The flat, scalelike nymph is orange to yellow when newly hatched and pale green when mature. Minute in size, they are difficult to see on the leaves as they hold themselves close to the surface, usually on the underside of the leaves in the upper half of the plant.

Outbreak numbers can initiate a complete crop loss before the potential damage is recognized by growers. Since outbreaks are independent of the previous year's infestation in potato fields, and the insect is inconspicuous, there is no warning of the buildup. It is, therefore, essential that growers and other agricultural workers be informed each spring if conditions indicate possible potato psyllid outbreaks.

The overwintering areas are in southern Texas centering in the vicinity of Del Rio and in another area in southern California and southern Arizona. At the end of March, potato psyllids are moving out of the overwintering areas and into west Texas, southern New Mexico, southern Arizona, and southern California. The size of the population occurring in the spring breeding area in late March determines the quantity available to move north during May and June.

Each year psyllid surveys are initiated in March in the southern portions of Arizona, California, and western Texas by Division personnel. Beginning in May, five separate surveys made at two-week intervals by state personnel in established areas within the States of Colorado, Nebraska, Utah, and Wyoming are initiated. The timely data obtained from these surveys are released through state and Federal agencies as a forecast of psyllid populations to be expected.

The area where the potato psyllid causes the greatest damage comprises most of Colorado, southeastern Montana, western Nebraska, Utah, and Wyoming. In epidemic years, damage may extend somewhat beyond this area and under favorable conditions may occur in restricted areas where early potatoes are grown in Arizona, California, New Mexico, and Texas.

In fiscal year 1961, the potato psyllid survey in Arizona and California indicated a population much lower than that of the last two years and a potentially light movement from the overwintering areas to the north. The survey in New Mexico and Texas revealed higher populations than in 1960 and in some areas more than in any previous year since 1958.

PROGRAM AIDS

The following informational and pictorial materials on plant pest control programs are available to interested individuals and agencies.

This material may be obtained by direct request to the Plant Pest Control Division, Agricultural Research Service, U. S. Department of Agriculture, Washington 25, D. C.

Motion picture films--Barberry eradication, grasshopper control, gypsy moth, imported fire ant, insect detection, Japanese beetle, khapra beetle, and Mediterranean fruit fly (available for loan).

2" x 2" colored slides--For all programs (available for loan).

Exhibits--European chafer, golden nematode, gypsy moth, insect survey, Japanese beetle, khapra beetle, pesticides, survey and detection, and witchweed (may be scheduled for fairs and other shows).

Publications--Bulletins, pamphlets, and circulars giving details of each pest involved in Division programs.



**INSECT DETECTION IS FOR
YOUR PROTECTION**
**BE ALERT REPORT PROMPTLY ANY
NEW OR UNUSUAL PLANT PEST TO
YOUR NEAREST AGRICULTURAL
OFFICIAL.**

—Plant Pest Control Division ARS USDA





COOPERATIVE PROGRAMS PLANT PEST CONTROL DIVISION

central region

FISCAL YEAR 1961

AGRICULTURAL RESEARCH SERVICE

United States Department Of Agriculture

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INTRODUCTION

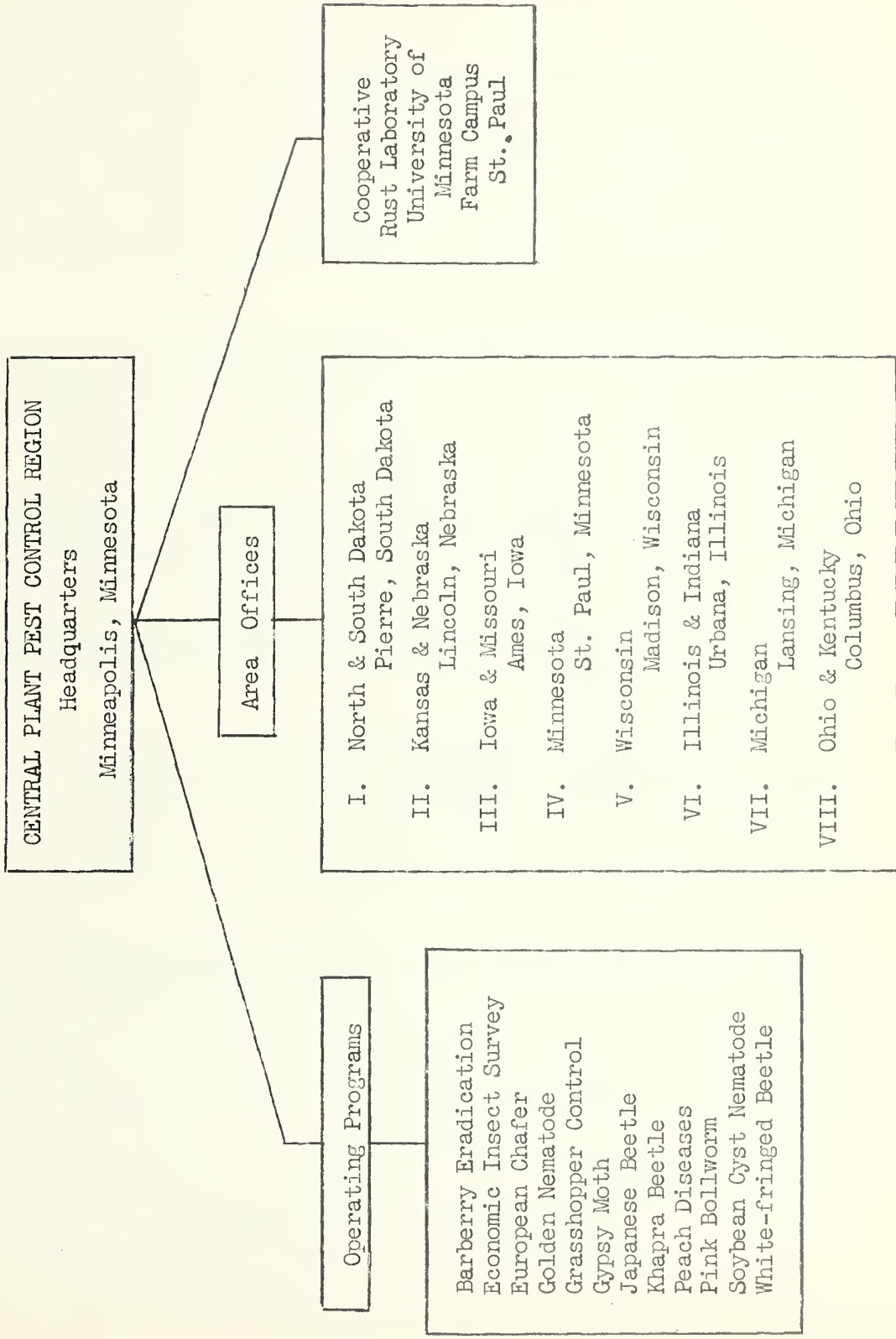
The Plant Pest Control Division in the Central Region participates in twelve programs, including insect survey and detection. All programs are planned and conducted cooperatively by Federal and State agencies, with a resident Federal Supervisor in charge of each of the eight areas. The overall administration and coordination of the programs is the responsibility of the Regional Supervisor, Minneapolis, Minnesota.

The State Departments of Agriculture and/or Conservation, through their appropriate State regulatory agencies, actively participate in the survey, control, and regulatory phases of all programs. They provide funds, equipment, and services, and assign seasonal personnel as needed to carry out the various program activities. The State Extension Service, through county agents and specialists, assist in program operations by disseminating information through news releases and their radio and television facilities. County agents in many instances have actively participated in organizing special program operations.

Research activities affecting the Division's programs, conducted by State Experiment Stations and ARS Divisions, are an important source of technical assistance. Office and storage space is provided for our field personnel, in addition to greenhouse and laboratory facilities.

The Crop Quality Council, Minneapolis, Minnesota, formerly the Rust Prevention Association, is an active co-operator. This agency supports the Division's programs at the State and Federal levels. Personnel of the organization make extensive field trips to observe crop development and prevalence and severity of crop pests. They make collections of stem rust for race determination, provide reports of the severity and prevalence of this important disease of small grains, and make estimates of damage to cereal crops. The organizational activities of this cooperating agency are extremely important to all the Division's programs.

The following pages include a brief summary of the Central Region's program activities for the 1961 fiscal year.



BARBERRY ERADICATION

Surveys for and eradication of rust-susceptible barberries were continued in the Central Region States at about the same level as during the previous year. Initial surveys of the farmstead type were conducted in Kansas, and rework was done in previously infested areas in other eradication States. A total of 6,719 square miles was covered and 11,323 rust-susceptible barberries were eradicated on 795 properties. The surveys during the year resulted in placing 5,304 square miles in the maintenance category and relegating 664 properties to an inactive status.

Rework in several States this year added more evidence that the "suppression" type of survey was not entirely effective. This survey was conducted during World War II, when manpower was not available to intensively rework areas to the outer limits of spread. Under the intensive type of surveys conducted this year in areas previously covered by the suppression type, missed bushes were uncovered that were in the fruiting stage. Likewise, reconnaissance surveys in "completed" territory located bushes in areas not previously infested. This clearly illustrates that to obtain eradication there is no substitute for the intensive type of survey with its thorough and effective coverage.

In Michigan "trusty" prison personnel were again used in several areas of the State, resulting in a good progressive program. The overall accomplishment in the Central States was much the same as in the previous year.

Regulatory activities in the Central Region involved the inspection of 215 nurseries and the contacting of 45 dealers in accordance with the provisions of Quarantine 38.

Stem Rust in 1960

The total stem-rust damage to winter wheat was small in 1960, although rust on late wheat in Kansas and southeastern Nebraska resulted in Statewide losses of 2 and 5 percent, respectively. Stem rust in barberry areas of Virginia and West Virginia was responsible for losses of 1 percent in these States, but elsewhere the damage was negligible. Aggregate loss, compared with that in 1959, was greater west of the Mississippi River and less in the area eastward. Damage to spring wheat was as nearly non-existent as it has ever been, with the predominant Selkirk and the newer durum varieties resistant to the prevalent physiologic races. Stem rust of oats remained light throughout the season, with no measurable loss recorded.

The amount of stem-rust inoculum was kept low by unfavorable weather during the previous winter and early spring in Texas, and there was little spore movement northward until June or later. Spores on vaselined slides exposed in Texas were scarce up to harvest time in the northern part of the State and occurred in Oklahoma at the low rate of 1,000 to 9,000 per square foot of surface. Spore counts for the two States were small in comparison with counts during 1957, 1958, or 1959. As stem rust increased in late wheat in Kansas, however, spores in the air increased to a maximum of over a million per square foot at Wichita on June 24, a number comparable to the maximum in the epidemic year of 1935. There was thus abundant inoculum for the late wheat in southeastern Nebraska and for areas farther north.

Lack of moisture in the spring-wheat area, however, combined with high temperatures beginning the second week of July, limited rust development on susceptible varieties and hastened crop maturity.

Wheat Stem Rust. Race 56 of wheat stem rust was predominant among 14 races. It comprised 67 percent of 721 uredial isolates from 585 collections of wheat, barley, and grasses in 23 States. This race has not been so abundant since 1947, when it comprised 69 percent of the isolates. Next in order of prevalence were race 15B, with 17 percent; race 11 with 7 percent; 29, 4 percent, or a decrease of 18 percent from 1959; and 10 other races together, 5 percent.

Race 15B, the most prevalent race during 1950-1957, was widely distributed but more common than elsewhere in the spring-wheat area, where it comprised 27 percent of the isolates. There were at least 5 groups of isolates of this race which can be differentiated on supplemental varieties. Two of these groups attack Selkirk wheat and were the most prevalent in 1960. In Texas, aside from experimental plots, race 15B was collected only once.

Certain isolates of race 11 are virulent on seedlings of line II-50-17, of the hitherto highly resistant Frontana x (Kenya 58-Newthatch) and on Bowie.

Among 77 aecial isolates, 16 races were identified, 7 of which were found only on barberry. The diversity of races in barberry areas was also evident from collections on grains.

Oat Stem Rust. Races 6 and 7 of oat stem rust each comprised 23 percent of 130 isolates identified from 17 States. This was the first year in 11 consecutive years in which race 7 has been equaled in prevalence by another race. Race 2 (with the closely related race 5) totaled 20 percent of the isolates; race 8 (with 10), 14

percent; 7A, 11 percent; other races, 9 percent. Compared with 1959, these figures indicate a marked decrease in race 7 and an increase in races 6 and 2. The virulent race 6A, found for the first time in this country, was collected in Maine, New York, and Illinois. Two new races, tentatively designated 2A and 5B, attack oats having the so-called Canadian type of resistance. Race 7A, which also attacks these oat varieties, was found only in Minnesota, North Dakota, and South Dakota.

Six races were identified among 10 isolates from barberry.

Barberry Susceptibility Tests

Thirty barberry species or varieties were tested for susceptibility to stem rust in 1960. Teliospores of the tritici, secalis, and agrostidis varieties of Puccinia graminis were used as inoculum. Included in the tests were 5 new barberries, of which Berberis holstei proved susceptible; B. Elliottii, B. hybrid Emerson, and B. macrosepala require further testing; and Mahonia pumila was sufficiently resistant to be added to the list of barberries that may be grown by nurseries.

The remaining 25 barberry species, which had been tested previously, were given additional tests with different rust varieties or with different collections of varieties already used. All retained the resistance previously shown.

It appears from the reduction in the number of tests required this year that comparatively few new barberries are appearing on the market.

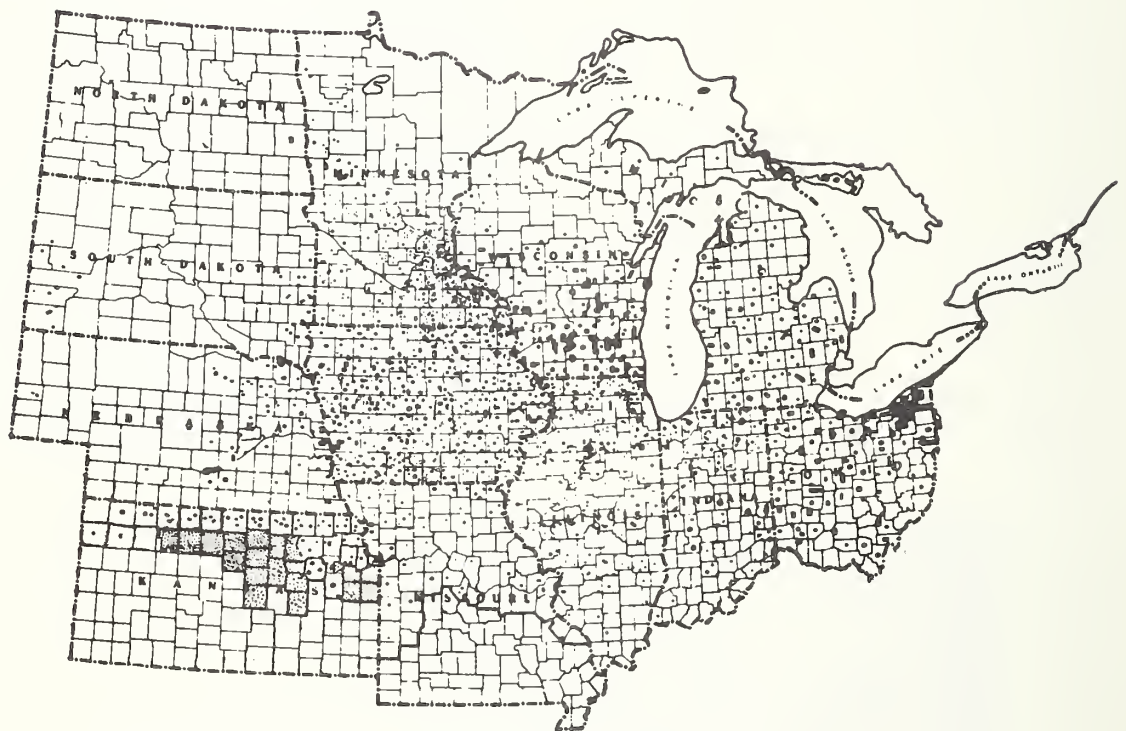
Seventeen-foot barberry bush destroyed at Topeka, Kansas, in 1961. Tallest bush found to date in Kansas.






At left - Pencil indicates size of the stump after the 17-foot bush had been prepared for Ammate treatment.

BARBERRY ERADICATION - CENTRAL REGION

STATUS JULY 1 1961



	Area requiring intensive work	13,878	square miles
	Areas requiring farmstead work	14,521	square miles
	Area on maintenance	648,144	square miles

PRESENT STATUS, PROGRESS, AND FUTURE REQUIREMENTS, 1918-1961

State	Square Miles										Properties										Barberry Bushes Destroyed			
	Number					Covered					Number Requiring Work					No. Re-					Total			
	Initial Work					Rework					Farmstead					No. Re-					No. Need-			
	Farmstead					Intensive					Initial Rework					No. Re-					ing One or			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Illinois	56,043	56,043	34,679	4,659	7,802	0	0	0	724	55,319	20,057	2,792	17,265	2,660,906	89,781	2,750,687								
Indiana	36,045	36,045	27,329	8,405	3,498	0	299	14	222	35,510	7,013	764	6,249	200,067	212,118	412,185								
Iowa	56,167	56,167	44,526	4,670	12,253	0	323	255	3,966	51,623	15,878	4,745	11,133	1,325,067	125	1,325,192								
Kansas	32,807	18,908	0	0	0	13,899	0	0	287	18,621	332	332	0	3,564	1	3,565								
Michigan	57,481	57,481	26,637	17,096	11,199	0	0	8	1,238	56,235	19,330	4,769	14,561	6,739,725	16	6,739,741								
Minnesota	80,883	80,883	32,958	28,742	8,307	0	0	0	1,215	79,668	9,364	2,256	7,108	1,015,044	0	1,015,044								
Missouri	37,206	19,724	17,660	789	961	0	0	32	194	36,980	1,928	678	1,250	24,646	0	24,646								
Nebraska	77,268	77,268	36,832	34,966	7,361	0	0	0	456	76,812	4,952	243	4,709	149,160	0	149,160								
North Dakota	70,183	70,183	1,276	30,105	419	0	0	0	21	70,162	1,084	12	1,072	39,562	0	39,562								
Ohio	40,740	40,740	32,197	6,289	12,413	0	0	0	2,247	38,493	17,697	2,702	14,995	3,799,475	0	3,799,475								
South Dakota	76,868	76,868	12,906	4,538	1,529	0	0	0	208	76,660	1,574	87	1,487	136,490	0	136,490								
Wisconsin	54,852	54,852	21,314	23,886	11,709	0	0	0	2,791	52,061	18,077	5,615	12,462	5,725,000	0	5,725,000								
Totals	676,543	645,162	288,314	164,145	77,451	13,899	622	309	13,569	648,144	117,286	24,995	92,291	21,818,706	302,041	22,120,747								

Barberry Eradication Accomplishments - Fiscal Year 1961

State	: Square : Miles : Surveyed	: Old Prop- : erties : Reinspected	: Total : Properties : Infested	: Nursery : Establishments : Inspected	: Total : Bushes : Destroyed
Illinois	44	227	44	38	556
Indiana	11	60	2	13	2
Iowa	728	416	63	9	1,130
Kansas	4,705	16	54	14	696
Kentucky*	-	-	-	14	-
Michigan	262	1,241	276	28	4,092
Minnesota	208	195	39	51	252
Missouri	19	23	6	14	31
Nebraska	55	66	4	2	5
North Dakota	2	2	0	3	0
Ohio	233	329	88	65	812
South Dakota	11	10	0	1	0
Wisconsin	<u>441</u>	<u>751</u>	<u>219</u>	<u>8</u>	<u>3,747</u>
Totals	6,719	3,336	795	260	11,323

*Kentucky does not participate in the cooperative eradication program.

ECONOMIC INSECT SURVEY

Illinois, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin have agreements with the Plant Pest Control Division to cooperate in the economic insect survey program. Ohio recently signed such an agreement but has not as yet employed a survey entomologist. Survey entomologists, employed by the State, submit weekly reports on insect conditions to a State clearing office. Here the reports are released to various State agencies, individuals, and to the Plant Pest Control Division. The State and Federal plant pest control workers are alert at all times to the possibility of detecting and reporting outbreaks of pests new to their area.

Two new movie shorts, "Wanted--Plant Pest Detectives" and "Unwanted Aliens," have been made available to the Region and have been widely used. Survey entomologists have assisted with Regional program surveys and Plant Pest Control personnel have in turn reported to them on insect abundance.

During the winter insect detection workshops were held at La Crosse, Wisconsin; Columbus, Ohio; Urbana, Illinois; Cedar Rapids, Iowa; Sikeston, Missouri; and Marysville, Kansas. State and Federal workers, both professional and non-professional, attended and participated in these detection workshops. Emphasis was placed on the importance of observing

and reporting plant pests which might be new and of economic importance within a specific area.

EUROPEAN CHAFER

The European chafer has not been found to date in the Central Region. However, limited scouting and trapping was carried on in four States during the year ending June 30, 1961. Several years ago plant material from a nursery in New York, which later was suspected of having a chafer infestation, was shipped to one or more localities in Indiana, Michigan, Minnesota, and Ohio.

During the fiscal year 1961, ten black light traps were in operation in several localities in the above-mentioned States. The traps were operated by Federal and/or cooperating State personnel.

GOLDEN NEMATODE

Since the discovery of the golden nematode on Long Island in 1949, intermittent surveys have been made in the potato-producing areas of the Central Region. During the past fiscal year surveys were made in Michigan, Minnesota, North Dakota, South Dakota, and Wisconsin. No nematodes were found. This completes the 5-year survey cycle in the Region and no further survey is scheduled until the fiscal year 1963. Soil samples were taken from potato fields or grader sites. A total of 5,580 samples was collected in these States for a grand total of about 52,197 field and grader samples in the Region since the origin of the survey.

Golden Nematode Accomplishments - Fiscal Year 1961

State	:No. Counties: : Surveyed	No. Properties: : Surveyed	No. Acres : Surveyed	: Samples : Collected
Iowa	10	57	2,639	758
Michigan	25	186	4,594	628
Minnesota	27	609	71,679	1,539
North Dakota	7	315	82,875	1,860
South Dakota	16	44	4,718	201
Wisconsin	<u>33</u>	<u>219</u>	<u>22,206</u>	<u>594</u>
Totals	118	1,430	188,711	5,580

GRASSHOPPERS

Grasshopper populations in both crop and range were generally light to non-economic. In local areas, where these pests were a threat to native or cultivated crops, land owners on an individual basis applied recommended control measures with satisfactory results.

Reports from States in which voluntary control activities were necessary indicated the acreage treated varied from none in Michigan, Ohio, and Kentucky, to a few thousand in Indiana, Iowa, Missouri, Kansas, Minnesota, and Wisconsin. In Illinois, Nebraska, and South Dakota the acreage was between fifty and one hundred thousand. North Dakota was high, with an estimated total of 251,755 acres.

The principal species in crop areas included: Melanoplus femur-rubrum, M. bivittatus, M. differentialis, M. bilituratus, and Camnula pellucida. In range areas the dominant species of the rather large complex were M. bilituratus, Ageneotettix deorum, Aulocara ellioti, Camnula pellucida, Metator pardalinus, Trachyrhachis kiowa, Arphia spp., and Amphitornus spp.

The insecticides most generally used by landowners throughout the Region included: Dieldrin, Aldrin, Heptachlor, Toxaphene, Chlordane, and Malathion.

The following table shows the acres treated on rangeland by States under cooperative control action:

Grasshopper Control Accomplishments, Rangeland - Fiscal Year 1961

State	:	Total	:	Acres Treated	
		Acres			
		Infested		Ground	Air
North Dakota		39,180		5,300	0
South Dakota		<u>21,700</u>		<u>1,100</u>	<u>0</u>
Totals		60,880		6,400	0

GYPSY MOTHS

The trapping and scouting activities in Michigan during the 12-month period ending June 30, 1961, produced negative results as no male moths or egg clusters were found. During May of 1960 all known infestations in the State, involving 17,494 acres, were treated with a DDT-oil insecticide under a State-Federal program. As of June 30, 1961, no gypsy-moth infestations were known to exist in Michigan or elsewhere in the Central Region.

Eradication of this pest from Michigan and the Region is the goal of all cooperating activities. Under the long-range plan, trapping and scouting will continue in the proper season of each year until it is mutually determined by State and Federal officials that the goal of eradication has been attained.

More than 5,200 traps were set in Michigan during the fiscal year 1961, and some scouting for gypsy-moth egg masses was done in Ohio and Indiana incidental to other survey activities.

Gypsy Moth Accomplishments - Fiscal Year 1961

State	Acres Surveyed	Traps in Use	Industry Sites Inspected
Kentucky	-	50	4
Michigan	1,152,000	5,233	-
Ohio	-	-	23
Totals	1,152,000	5,283	27

Gypsy Moth Program - Michigan: 1954 - 1961

County	Year	S u r v e y						Acres Sprayed
		Year	First	Male Moths Trapped	Egg Masses Found			
		In- festes	ber	Num- ber	No. of Locations	Num- ber	No. of Locations	
Calhoun	1960	X	5	3	0	0		6,974
	1961	0	0	0	0	0		0
Clinton	1954	0	0	0	0	0		9,440
	1955	X	2	2	12	1		3,840
	1956	0	0	0	0	0		9,600
	1957	0	0	0	0	0		480
	1958	0	13	5	12*	1		0
	1959	0	0	0	65*	0		14,177
	1960	0	0	0	0	0		0
	1961	0	0	0	0	0		0
Eaton	1954	X	50	3	50	1		18,880
	1955	0	24	15	0	0		23,040
	1956	0	1	1	0	0		37,600
	1957	0	0	0	0	0		14,720
	1958	0	1	1	0	0		0
	1959	0	0	0	0	0		2,957
	1960	0	39	3	91	1		10,520
	1961	0	0	0	0	0		0
Ingham	1954	X	0	0	4,000	4		58,080
	1955	0	5	5	1	1		6,530
	1956	0	0	0	0	0		50,060
	1957	0	0	0	0	0		0
	1958	0	1	1	0	0		0
	1959	0	0	0	0	0		2,957
	1960	0	0	0	0	0		0
	1961	0	0	0	0	0		0
Ionia	1954	X	1	1	0	0		0
	1955	0	0	0	0	0		2,560
	1956	0	0	0	0	0		0
	1957	0	0	0	0	0		0
	1958	0	0	0	0	0		0
	1959	0	0	0	0	0		0
	1960	0	0	0	0	0		0
	1961	0	0	0	0	0		0
Shiawassee	1956	X	1	1	0	0		1,600
	1957	0	0	0	0	0		3,680
	1958	0	0	0	0	0		0
	1959	0	0	0	0	0		0
	1960	0	0	0	0	0		0
	1961	0	0	0	0	0		0
Totals			143	41	4,231	9		277,695

*12 egg masses found on 3 oak trees in December and 65 in a shed in March--
both at same location.

JAPANESE BEETLE

Problems associated with the Japanese beetle program continued to involve survey, control, and regulatory. Following a detailed, planned survey program, extensive trapping and observation surveys were conducted throughout the Central Region. Nearly 45,000 traps were used throughout the Region and 102,050 acres were visually surveyed.

The survey activities resulted in the cooperative soil treatment with residual chemical of 122,432 acres in Michigan, Illinois, Ohio, Kentucky, Iowa, and Missouri. Of this total, 115,030 acres in Michigan, Illinois, and Kentucky were treated by aircraft. The remainder was treated with ground equipment. A limited amount of DDT emulsion spray was also applied in sections of Ohio, where the beetles were heavy. All control work conducted during the year was in cooperation with the States involved.

As part of a study conducted by the Division to determine the extent beetles were being spread via airplanes, certain scheduled planes were inspected at 13 air terminals in the Central Region. A total of 1,108 planes, originating in beetle-infested areas, was inspected during the beetle flight period. Beetles were found on 66, or 6 percent, of the planes inspected.

In an effort to reduce beetle spread from infested areas in parts of Ohio, certain airports were soil treated. Airport officials provided the chemical, and application was by Federal personnel. Treatment was applied to all, or part, of the parking and loading areas and the sodded and planted acreage adjacent to the terminal buildings. During the period, October 1960 to June 1961, a total of 867 acres had been soil-treated on 6 different installations. The locations of these airports are: NASA-Cleveland-Hopkins; Cuyahoga County; Akron Municipal, 757 Troop Carrier Squadron, Youngstown; Lunken Airport Playground, Cincinnati; and Zanesville. Efforts are being made to extend the treatment to additional infested airports that may constitute a hazard to the spread of the beetle by air.

There was no change in the State or Federal regulated areas during the year. Emphasis was placed on quarantine requirements in Lucas County, Ohio. All retail establishments and outlets were contacted and informed concerning the restrictions on the movement of plants, soil, and sod to unregulated areas. Agreements were signed with these business concerns and posters were conspicuously placed for the benefit of purchasers residing outside of the regulated area. These operations, supplemented by radio, television, and newspaper notices promoted by the Lucas County Agricultural Agent, virtually eliminated the unlawful movement of plant material into non-regulated areas.

The major regulatory activity involved the certification procedures required in accordance with the Federal quarantine. Some

progress has been made in "treatment by direction," but not to the extent of noticeably reducing the inspection work load. It is planned to extend this procedure to more establishments as they are considered eligible. During the year, 18,359,066 plants were certified and 16,116 tons of potting soil were treated for certification. Plant Pest Control personnel supervised the soil and foliage treatment, for certification purposes, of 4,768 acres of nursery property. A total of 10,157 nursery acres was inspected and 3,597 service calls were made by field personnel assigned to the regulatory activities.

In cooperation with the Ohio Division of Plant Industry, a series of plots were established at Glenmoor and Toledo, Ohio, to determine the overwintering potential and infection rate of Bacillus popilliae of Japanese beetle grubs at spore dosages of 50 million and 100 million per square foot under the climatic conditions of northern Ohio.

Plots of two and one-half acres, treated with each granular formulation, were established at two locations, together with a check plot. Three months after setting out the plots, grubs and soil were collected from each of the plots and sent to Dr. W. E. Fleming for bioassay tests. Again in April 1961, grubs and soil were shipped to Dr. Fleming for further testing. Complete results of the tests are not available, and it has been suggested that two or three seasons are necessary for conclusive results.

As part of their contribution to this important work, the Central Region is furnishing grubs for the research work being conducted by Dr. Harlow H. Hall, of the Northern Utilization and Research Development, Peoria, Illinois, in an effort to develop milky disease on artificial media. As of June 30, 1961, we had provided more than 30,000 grubs and we plan to obtain an additional 40,000 during the fiscal year 1962.



Applying milky
disease spores to
turf plots -
Ohio, 1961.

Loading plane
with granular
insecticide for
treatment at
Sheldon, Ill.
1961.



KHAPRA BEETLE

Khapra beetle inspection surveys made throughout the Central Region the past several seasons have all been negative. Over 4,000 inspections have been made of principal storage warehouses, seed houses, mills, grain bins, breweries, and miscellaneous cargo unloaded from ships of foreign origin. Specimen collections submitted now total 760.

Two railroad cars were fumigated (9,814 cubic feet) on July 12, 1960, at Ashland, Kentucky. The cars had been loaded with 1,175 bags of myrobalan nuts from the S. S. Steel Navigator out of Bombay, India. The ship was found to be infested with khapra beetle, hence the necessity for the fumigation. A shipment of pipe unloaded from an infested ship in Chicago was inspected at Springfield, Ohio. No evidence of the beetle was found in this cargo.

This year inspections were made in seven of the thirteen States in the Region.

Accomplishments - Fiscal Year 1961

State	: Number : of : Inspections	: No. Specimen: : Collections: : Submitted	: Infested: : Sites : FY 1961	: Total : Infested : Sites	: Sites : to be : Treated
Minnesota	38	3	0	0	0
Missouri	25	0	0	0	0
Nebraska*	1,059	0	0	0	0
North Dakota	18	23	0	0	0
Ohio	18	0	0	0	0
South Dakota	4	3	0	0	0
Wisconsin	<u>6</u>	<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>
Totals	1,168	34	0	0	0

*This survey work was done by a graduate student in Entomology, who is working on dermestids.

PHONY PEACH AND PEACH MOSAIC

Phony peach surveys were started in the Central Region in 1931. Peach-growing areas in 14 counties in Illinois, 1 in Indiana, 6 in Kentucky, and 15 in Missouri have been surveyed intermittently since then. Whenever infected trees are found, they are destroyed by the property owner. The incidence of phony-peach disease in these counties continues to remain very low. Currently Jackson, Massac, Pulaski, and Union Counties, Illinois, and Dunklin County, Missouri, are under regulation by the respective States. During the 1961 fiscal year peach orchards in 3 Indiana and 11 Missouri counties were surveyed.

To date the peach mosaic disease has not been found in peach orchards in the Central Region. Annual inspections are made for this disease at two of Stark's Nurseries in Louisiana, Missouri, across the Mississippi River in Illinois, and at the Neosho Nursery at Neosho, Missouri.

Accomplishments - Fiscal Year 1961

State	: No. Surveyed	:No. of Hosts:	Props. :	Hosts :	Plants
	: Props.:	Acres:	Examined	:Infested:	Infested:Treated
<u>Phony Peach -</u>					
Indiana	7	-	32,050	2	8 1
Missouri	<u>61</u>	<u>-</u>	<u>67,870</u>	<u>4</u>	<u>11</u> <u>11</u>
Totals	68	-	99,920	6	19 12

<u>Peach Mosaic -</u>					
Missouri	<u>7</u>	<u>62</u>	<u>608,335</u>	<u>-</u>	<u>-</u> <u>-</u>
Totals	7	62	608,335	-	- -

PINK BOLLWORM

The pink bollworm is not known to be present in the Central Region. However, in 1959 infestations were found in two north-eastern Arkansas counties adjacent to the cotton-growing areas of the Missouri bootheel.

In Missouri, gin trash inspections were carried on cooperatively by the Missouri Department of Agriculture and the Plant Pest Control Division. A total of 5,819 bushels of trash from seed cotton on 194,014 acres in 7 counties was examined for the presence of the pink bollworm. All examinations were negative. Twenty-seven lint cleaner inspections, covering the ginning of 2,624 bales of cotton, were also negative.

Fourteen cotton insect scouts and one supervisor employed by farmers in cooperation with the University of Missouri Extension Service, checked approximately 25,000 acres for pink bollworm infestations through bloom inspections. No evidence of bollworm infection was found.

Regulatory activities were carried on in line with quarantine requirements. In Missouri, 11 cotton gins, 3 oil mills, and 6 cotton compresses entered into dealer-carrier agreements. State and Federal personnel supervised the fumigation of an estimated 590,970 pounds of cotton seed as well as a limited quantity of motes and ginned cotton.

Spot checks were made in all States where cotton products were moving from regulated areas to the Northern States. It was found that all the materials were properly consumed by processors in accordance with requirements.

Pink Bollworm Survey and Regulatory - Fiscal Year 1961

State	Properties : : Surveyed	Acres : : Surveyed	Processing : : Plants : : Inspected	Tons of Cotton : : Materials : : Fumigated
Kentucky	-	-	1	-
Missouri	855	194,014	91	296
Ohio	-	-	4	-
Totals	855	194,014	96	296

SOYBEAN CYST NEMATODE

During the year, soybean cyst nematode surveys were conducted in all States of the Central Region. However, the most extensive coverage was made of the principal soybean-producing areas of Illinois, Kentucky, and Missouri--the three States where the pest is known to exist. Soil sampling and symptom surveys were employed in all States.

This year initial infestations were found in Mississippi and Scott Counties, Missouri. Infestations are now recorded in two counties in Kentucky, one in Illinois, and six in Missouri.

Soybean cyst nematode damage in 1960 occurred in numerous fields in Fulton County, Kentucky, and in Dunklin, Pemiscot, Mississippi, and New Madrid Counties in Missouri. Losses in the Missouri counties ranged from 10 to 50 percent in individual fields. In 100 known infested fields loss was estimated at 9,407 bushels of beans valued at \$19,000. Many other infested fields also suffered some damage.

Several adjustments were made of the regulated areas during the year. The entire county of Fulton, Kentucky, was placed under regulation. In Missouri, the only change made in the regulated areas was the placing of certain properties under regulation in Dunklin, Mississippi, and Scott Counties.

Regulatory activities consisted of the certification of commodities and equipment. More than 40,000 bushels of seed beans were certified for planting purposes. Beans continued to move to storage and designated processing plants according to agreements. Nearly 400 pieces of equipment were cleaned or fumigated in accordance with the provisions of the quarantine. Soil samples collected for analysis by Federal and State agencies were fumigated and certified for shipment into non-regulated areas.

A well equipped soil washing laboratory was established at Hickman, Kentucky, to replace the station at Western School. The latter was an inconvenient location with extremely poor facilities.

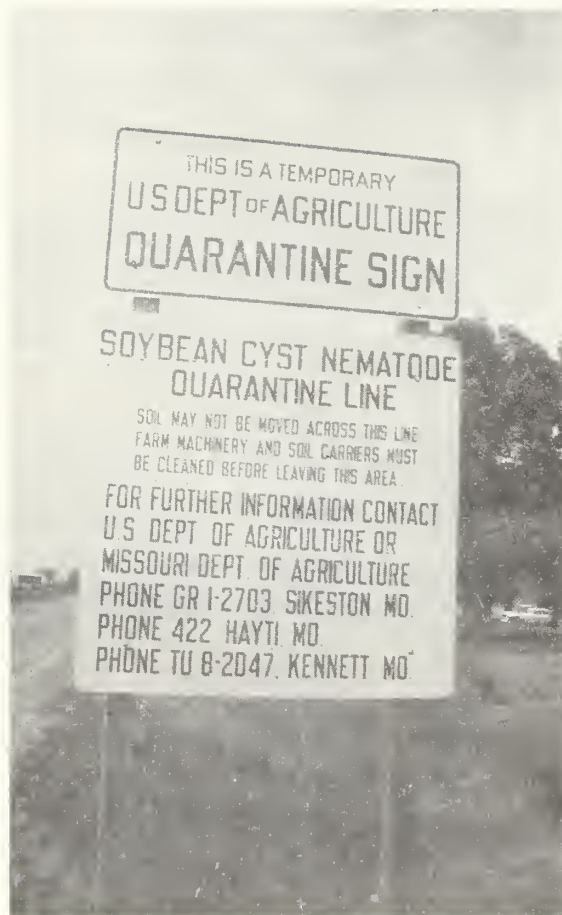
The single 20-acre infested field in Pulaski County, Illinois, treated with DD in 1959, now in soil bank, will be sampled next year to determine the effectiveness of the control treatment.

Accomplishments, Soybean Cyst Nematode Control - Fiscal Year 1961

State	: Prop- : erties : : Surveied:	: Acres : Surveied:	: No. of : Infested: Props. :	: No. of : Infested: Acres :	: No. of : Acres : : Fumigated:	: Commodities : Treated : Fumigated:	: Other
Illinois	870	35,965	-	-	-	-	-
Indiana	3,556	149,010	-	-	-	-	-
Iowa	79	2,397	-	-	-	-	-
Kentucky	1,909	63,364	15	1,519	-	91	198
Minnesota	324	7,350	-	-	-	-	-
Missouri	1,997	72,269	66	4,510	-	72	185
North Dakota	138	4,830	-	-	-	-	-
Ohio	309	8,855	-	-	-	-	-
South Dakota	172	6,015	-	-	-	-	-
Wisconsin	<u>48</u>	<u>995</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Totals	9,402	351,050	81	6,029	-	163	383

Soybean Cyst Nematode Infestations - Cumulative Through June 30, 1961

State	: County	: No. of : Properties: : Infested :	: Acres : Infested	: Commodities Treated : Fumigated :	: Other
Illinois	Pulaski	1	20	-	-
Kentucky	Ballard	2	75	-	37
	Clay	-	-	-	7
	Fulton	39	3,223	91	154
Missouri	Dunklin	43	1,838	12	115
	Mississippi	3	230	-	1
	New Madrid	22	1,049	-	19
	Pemiscot	213	8,904	60	42
	Scott	1	38	-	7
	Stoddard	<u>1</u>	<u>60</u>	<u>-</u>	<u>-</u>
Totals		325	15,437	163	382



Signs like the above have been placed this year at key highway locations where traffic leaves the soybean cyst nematode regulated area in southeast Missouri.

WHITE-FRINGED BEETLE

On September 23, 1960, a single white-fringed beetle was found near the Illinois Central Railroad right-of-way in the city of Fulton (Fulton County), Kentucky, about three-fourths of a mile north of the Tennessee line. This specimen was determined to be Graphognathus leucoloma striatus. The State of Kentucky furnished the insecticide for treating 14 acres surrounding the find in Fulton County. Subsequent surveys in this and other Kentucky areas have been negative.

Surveys for this insect pest in southeastern Missouri counties have also proved to be negative. However, the State of Missouri provided the insecticide as a precautionary measure for soil-treating 132 acres at railroad sidings along the St. Louis Southwestern Railroad in Butler, Dunklin, and New Madrid Counties. Infestations are present along this railroad in Arkansas, both south of where it enters Dunklin County, Missouri, and west of the point where it leaves the county.

Accomplishments, White-fringed Beetle - Fiscal Year 1961

	: Number	: No. of	: No. of	: No. of	: No. Acres
State	: of	: Properties	: Properties	: Acres	: Ground
	: Counties	: Surveyed	: Infested	: Infested	: Treatments
Kentucky	7	670	1	15	15
Missouri	<u>20</u>	<u>396</u>	<u>-</u>	<u>-</u>	<u>132</u>
Totals	27	1,066	1	15	147

ASSOCIATED ACTIVITIES

Program service activities are extremely important in each of the Division's operating programs. Every effort is made to reach not only agricultural interests but the public in general. Program information is disseminated through the facilities of the Division and cooperating participants. The Extension Service, through the county agent's facilities of radio, television, news releases, and meetings, has been fully utilized in keeping the public informed of the Division's activities.

Division and cooperating personnel discussed program activities formally and informally at farm- and civic-group meetings, crop shows, and science classes in colleges and high schools. Appropriate films and slides were used to supplement discussions.

Informational materials, including circular letters, pamphlets, and bulletins, were given wide distribution in the interest of program activities. Posters and charts were prominently displayed to alert the general public to plant pests. During the year, a total of 53,600 pieces of informational material was distributed throughout the Region.

Summary of Associated Activities - Fiscal Year 1961*

State	Public : :Meetings: :Attended:	P r e s e n t a t i o n s					:Feature: :& News :		Extent These Aids Were Used			Special :Maps: :Reports :
	Talks :	Slides:	Films:	Radio:	TV :	Stories:	hibits:	letins:	lars :	& Posters :		
Illinois	34	1	1	14	1	1	103	5	635	0	27	1,029
Indiana	7	0	1	8	0	0	0	1	180	0	6	5
Iowa	5	8	9	20	0	0	4	0	300	4,950	30	0
Kansas	0	0	0	8	2	0	5	2	80	2,950	150	28
Kentucky	26	22	20	11	20	7	66	0	2,000	2,300	0	0
Michigan	88	204	0	29	30	5	7	3	5,770	650	900	1
Minnesota	91	84	9	24	2	0	0	1	409	10	10	0
Missouri	22	22	8	5	3	10	10	0	85	4,545	175	0
Nebraska	5	13	11	25	0	0	4	3	300	275	225	20
North Dakota	48	41	34	0	20	20	80	0	50	1,750	2,000	0
Ohio	38	43	23	158	15	7	64	10	7,200	4,850	6,500	6
South Dakota	39	35	32	6	15	2	41	4	850	1,750	0	0
Wisconsin	2	2	0	16	294	0	6	0	1,030	390	255	0
Totals	405	475	148	324	402	52	390	29	18,889	24,420	10,278	1,089

*Includes State and Federal activities for all programs of the Central Region.



P L A N T P E S T C O N T R O L

COOPERATIVE PROGRAMS

EASTERN REGION

FISCAL YEAR

1961

September 1961
Moorestown, New Jersey

U. S. Department of Agriculture
Agricultural Research Service
Plant Pest Control Division



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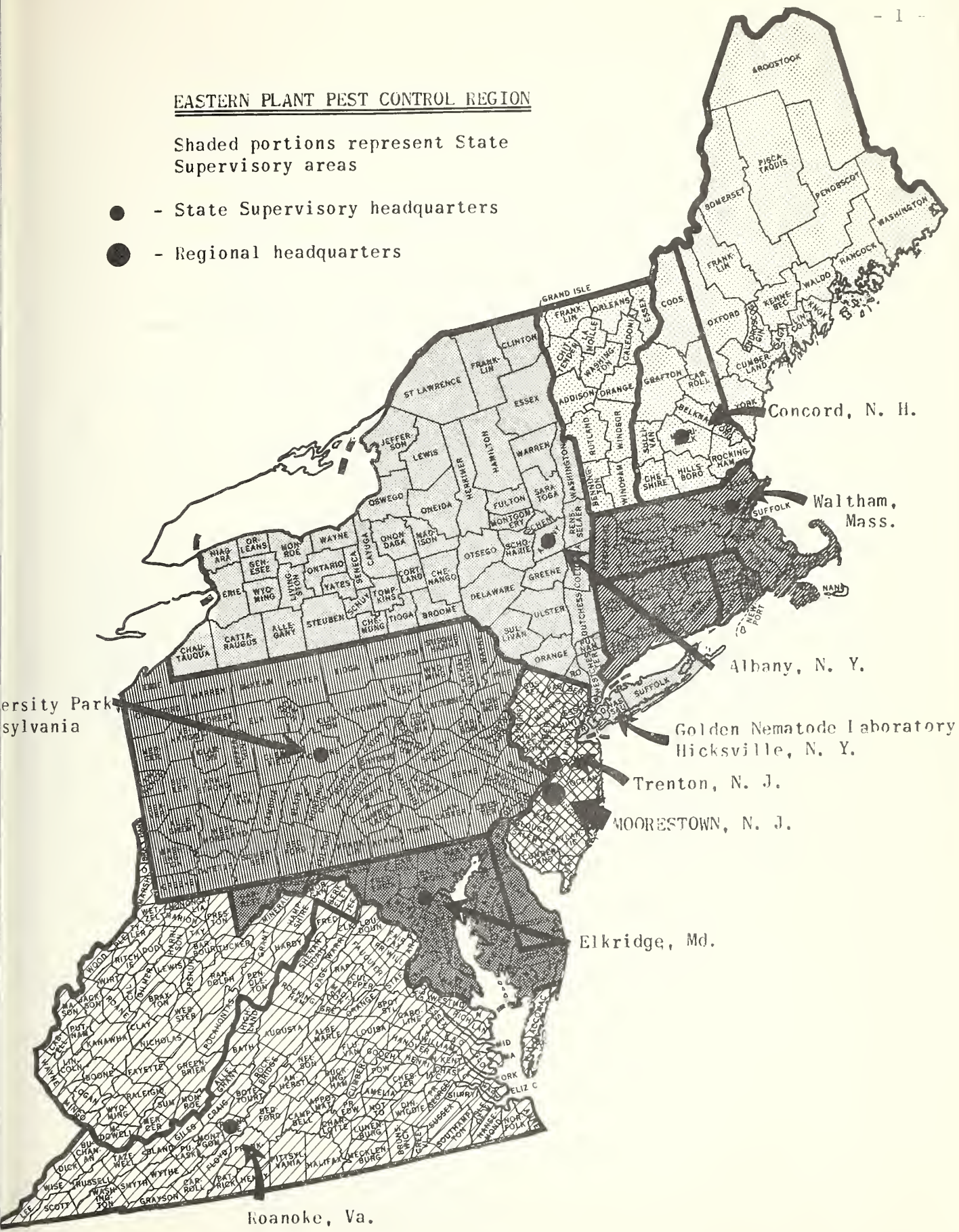
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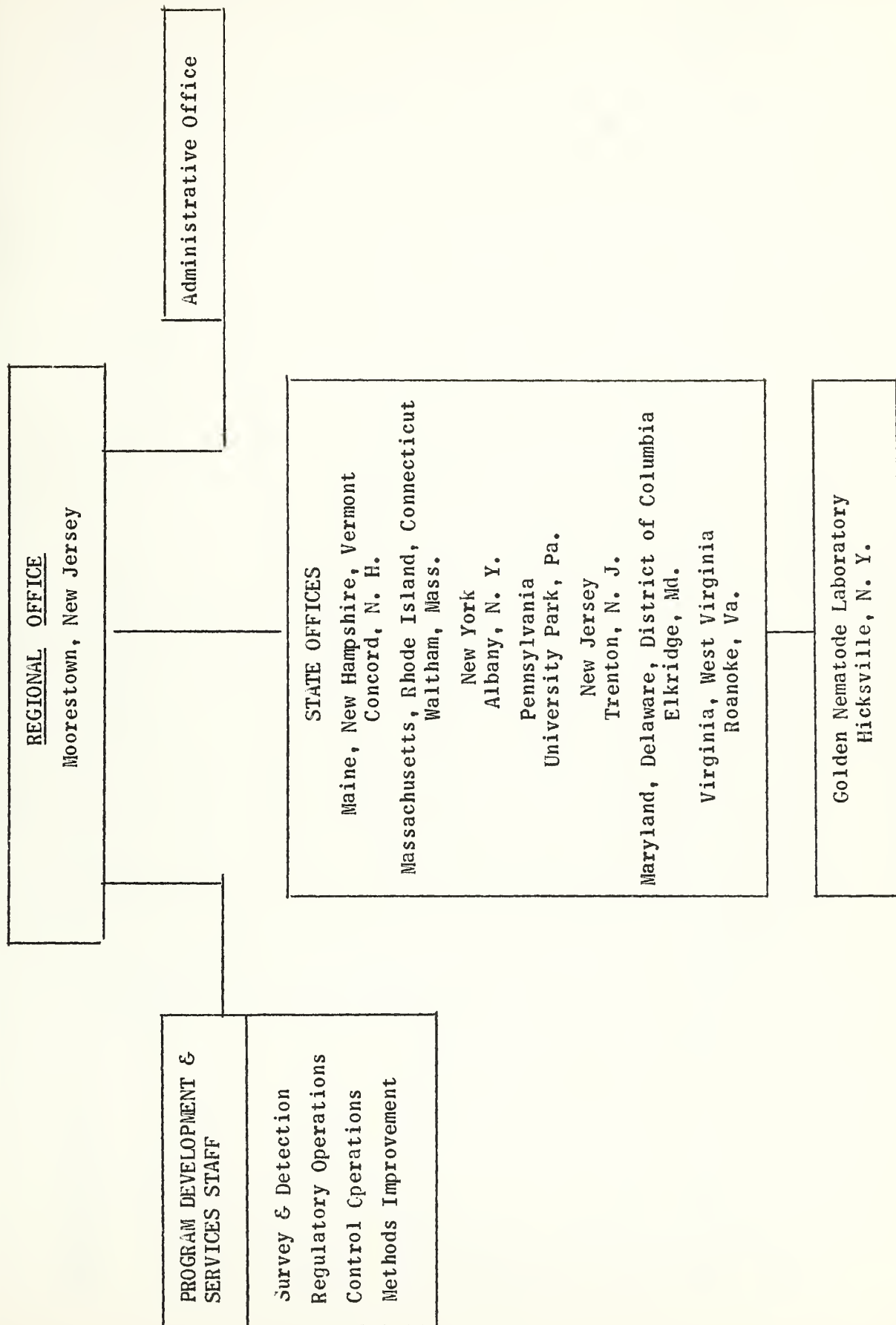
EASTERN PLANT PEST CONTROL REGION

Shaded portions represent State Supervisory areas

- - State Supervisory headquarters
- - Regional headquarters









SUMMARY OF ASSOCIATED ACTIVITIES

Eastern Region		Fiscal Year 1961										
Program	:Number :Persons :Attend.	:Public :Mtngs.	:Presentations				:Feature:		:Extent Used		:Spec. :Maps :Posters	
			:Talks	:Slides	:Films	:Radio	:TV	:& News	:Exhi-	:Bull. & Infest.		
Barberry	: 4,758	: 30	: 15	: 16	: 55	: 2	: 9	: 4	: 2,848	: 63	: 778	
C.E.I.S.	: 2,151	: 1	: 7	: 5	: 4	: -	: -	: 3	: 959	: -	: 776	
European Chafer	: 275,499	: 2	: 2	: 2	: -	: -	: -	: 8	: 14,293	: 300	: 776	
Golden Nematode	: 266,708	: 9	: 9	: 7	: -	: -	: 3	: 3	: -	: 100	: 777	
Gypsy Moth	: 523,457	: 38	: 17	: 14	: 64	: 17	: 5	: 10	: 14,660	: 1,949	: 778	
Imported Fire Ant	: -	: -	: -	: -	: -	: -	: -	: -	: 15	: -	: -	
Japanese Beetle	: 924,536	: 132	: 22	: 21	: 54	: 9	: 8	: 15	: 30,682	: 865	: 786	
Khapra Beetle	: 179	: 1	: 1	: -	: 1	: 1	: -	: 1	: 412	: -	: 778	
Soybean Cyst Nem.	: 55	: -	: 1	: 1	: -	: -	: -	: -	: 193	: -	: 2	
White-Fringed Beetle	: -	: -	: -	: -	: -	: -	: -	: -	: 732	: -	: -	
Witchweed	: -	: -	: -	: -	: -	: -	: -	: 1	: 354	: -	: -	
TOTAL - FY - 1961	: 1,997,343	: 213	: 74	: 66	: 178	: 27	: 15	: 45	: 65,140	: 3,277	: 5,451	



BARBERRY ERADICATION

Fiscal Year 1961

A total of approximately six and one-half million rust-spreading barberry bushes was destroyed on 1,200 of the 2,100 surveyed properties in sections of Pennsylvania, Virginia and West Virginia covering 2,800 square miles. A total of 290 previously infested properties was relegated to an inactive status and 1,650 square miles of territory were placed on maintenance in these states.

As of the end of fiscal year 1961, there remains a total of 14,114 square miles of territory in these three states scheduled for barberry eradication work. Of this area, 7,902 square miles require initial work and 6,212 square miles require rework one or more times. Thirty-four thousand, three hundred ninety-one square miles have been cleaned up and placed on a maintenance basis as needing no further organized work.

The Division continued to participate in the small grain Uniform Rust Nursery - established by the Experiment Station of The Pennsylvania State University. In the fall of 1959, winter wheat nurseries were put out in Lancaster and Huntingdon Counties, Pennsylvania, adjacent to barberries. These were observed in July 1960 and results, as well as collections, forwarded to the Federal Rust Laboratory for study. In the spring of 1961, a nursery containing spring oats, spring wheat and winter wheat was established near barberry in Huntingdon County, Pennsylvania. This will be observed early in fiscal year 1962.

Stem rust infection on small grain was very light during June and July of 1960. This continues to point up the benefits derived from barberry eradication.

During the year, a total of 147 nurseries, with premises totalling 27,000 acres, and 27 dealer establishments in 11 states was inspected and issued certificates or permits for the interstate movement of products regulated under Quarantine No. 38.



COOPERATIVE ECONOMIC INSECT SURVEY

Fiscal Year 1961

Discussions were held in all states between Plant Pest Control employees and state clearing house representatives. In many states contact was made with other cooperators with formal workshops being conducted, sometimes resulting in considerably increased participation in the Cooperative Economic Insect Survey on the part of Division employees and other workers.

Arrangements were made to train ten employees in the Eastern Region in the identification of specific program pests. This provides for faster identification of specimens and a decreased workload on the Washington taxonomists.

The preparation of reference insect collections was initiated. These contain program pests and those with which they may be confused as well as important foreign species. This reference material is provided to each location where primary identification work is conducted within the Region and, to the extent material is available, to state clearing houses as well as other Eastern Regional field stations.

There was a marked increase in detection surveys for new pests. Two detection surveys were initiated: general detection, making use of black light traps around strategic ports of entry and a fruit fly detection program through the use of traps in selected areas.

Discussions were held with state clearing house representatives to provide for the preparation of weekly cooperative economic insect reports in accordance with an agreed-upon format which would provide for better continuity when reporting pests of economic importance within the state.



EUROPEAN CHAFER

Fiscal Year 1961

There was some survey for adults during 1960 in all states, with the most intensive work in New York, New Jersey, Connecticut, West Virginia and Pennsylvania. Most of the survey was by visual observations during evening hours. Approximately 100 of the new black light traps and a smaller number of the Java citronella-eugenol baited traps were used in New York, New Jersey, West Virginia and Connecticut. In addition to survey for the adult, efforts were continued to have home gardeners and others in charge of turfed areas submit for identification to Federal or State Plant Pest Control offices specimens of all "white grubs" noticed during gardening or turf maintenance operations. No chafer grubs were reported from such sources this year.

There was continued local spread of the chafer at several points adjacent to known infestations in New York; and small numbers were noted at the Meriden, Connecticut infestation. In New Jersey, survey showed that the infestation discovered near the New York Harbor area in June 1960 extended to include nearby areas in the Jersey City-Bayonne sections. No chafers were found in West Virginia, or the remaining states in this Region.

Surface soil residual insecticide control treatments were applied to 3,600 acres in New York and to more than 2,400 acres in New Jersey. Connecticut reported the application of such treatment to two and one-third acres in Meriden. Residual soil treatments applied for control from the beginning of the cooperative program in Connecticut, New Jersey, New York and West Virginia total 10,500 acres.

No changes were made in the Federal-State quarantines which apply to single sites in Connecticut and West Virginia, also in Kings County and Governor's Island in the New York Harbor area. In western New York, the entire counties of Monroe and Wayne, also parts of five other counties are regulated. Practically all regulatory activities were in New York where 48,000 acres in nurseries were field inspected and there were 750 field inspections of other premises and packing sheds. In addition, 250 acres of nurseryland and 66,500 units of commodities were treated.

Progress has been made in improving survey techniques and the black light trap has been improved. The new 15 watt baffled black light trap illustrated here is being procured for use during the 1961 adult chafer season.



GOLDEN NEMATODE

Fiscal Year 1961

Approximately 60,000 field and grader soil samples were taken from more than 100,000 acres in 56 counties in six states. Two-thirds of the samples were from Long Island, New York farms, and the remainder, in numbers varying from 1,300 to 3,200, was from Delaware, Maine, New Jersey, Pennsylvania and Virginia. Sample processing stations were operated in each of the surveyed states.

Results were negative in all cases except Suffolk County, Long Island, New York where the nematode was found on ten new properties, involving 828 acres. Five thousand, eight hundred twenty-four acres of the 15,000 infested acres recorded since the program was initiated, are now available to agriculture. The reduction is accounted for by land developed for real estate (9,300 acres) and areas treated and released (685 acres).

The eradication program initiated in June 1960 was continued through September. Thirteen fields totalling 583 acres were fumigated using dichloropropane-dichloropropene as a soil fumigant. The fumigant was applied at the rate of 90 gallons per acre in split applications of 45 gallons each, with a minimum interval of ten days between treatments. Post-treatment surveys of these fields failed to reveal any viable golden nematode cysts and the fields were returned to potato production the spring of 1961.

The Division continued to cooperate with the New York State Department of Agriculture and Markets in the enforcement of the intra state quarantine regulations, which were changed in April of 1961 to provide for the growth of potatoes on lands known to be infested with Golden Nematode after appropriate treatment and requires permit to operate commercial grading stations with certain additional restrictions on handling and disposal of grader dirt and debris.

THE HISTORY OF THE

REIGN OF

CHARLES THE FIRST
BY
JOHN BURNET
OF LINCOLN'S INN
ESQ.
IN TWO VOLUMES.
LONDON, Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, 1680.

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GYPSY MOTH

Fiscal Year 1961

More than 29,000 traps were used in a male-moth survey of 12-1/3 million acres in New Jersey, New York and Pennsylvania. One thousand additional traps were used for the same purpose in parts of Delaware, Maryland, Vermont, Virginia and West Virginia. There was supplemental visual scouting for egg clusters as needed. One moth was trapped in non regulated New Hampshire and a total of 64 outside regulated areas in Vermont. Results were negative in all other surveyed states except New York.

In New York, where males were trapped both outside and in regulated territory adjacent to quarantined border, 12 light infestations were found in non regulated areas and 7 in the suppressive area. Within the regulated area, heavy trap recoveries were made in Suffolk County, Long Island and in Clinton County, adjacent to the Canadian border. Numerous males were trapped in interior townships in southern and central regulated counties.

A total of 32,700 acres had foliar applications in cooperation with the New York State Department of Conservation. Included were all known infestations outside regulated areas and within the quarantined suppressive area, also northeastern woodlands in the Conservation Department's suppressive program. New York State Department of Conservation treated an additional 24,000 acres for suppression. DDT was used in all places except one adjacent to dairy land where Sevin was applied. Approximately 31,000 acres were sprayed with Sevin or DDT in cooperation with the Vermont Department of Agriculture to suppress infestations near the Vermont-Canadian border. Five other states treated more than 75,000 acres within the generally infested area to suppress populations and prevent defoliation.

Defoliation in 1960 was noted on approximately 49,000 acres as compared to approximately 14,000 acres in 1959.

Regulatory activities continued throughout the year in cooperation with the State regulatory departments in New York and New England. This program involved field inspection of 79,300 acres of nursery and other premises, 16,300 inspections of processing, industry and shipping sites, foliar treatment of 1,200 acres and certification of 11,400,000 commodity units. Federal quarantine administrative instructions designating regulated areas were revised March 24, 1961. One township in Essex County, New York was added to the regulated area and there were adjustments in the generally infested-suppressive areas in New York.

Progress was made in the continuing efforts with Research to develop safe, effective spray formulations. Arrangements were completed to use the economical disposable Johnson traps (see photo) in addition to the smaller supply of Graham traps in 1961, both baited with gyplure.



JAPANESE BEETLE

Fiscal Year 1961

All of the territory in this Region is under regulation except for large parts of Maine and New York and a few counties in New Hampshire, Vermont and southwestern Virginia and West Virginia. There was an extension of State regulated area in West Virginia.

Aircraft disinsectization treatments were applied to planes departing from Friendship Airport, Baltimore, Maryland; Philadelphia International Airport; McGuire Airforce Base, New Jersey, and a few other important fields in the Pennsylvania-New Jersey area where adult beetle activity created hazardous conditions. Repeat foliar treatments were applied in cooperation with states and operators at these and all other important infested airfields to prevent or suppress beetle activity.

Soil treatments with residual insecticides were applied to all or parts of 10 military and non-military airports in New Jersey, New York, Maryland, Pennsylvania and Virginia. In preparation for the 1961 adult beetle season, PPC personnel demonstrated to aircraft operators the CO₂ propelled DDT dry aerosol treatment specified as the authorized plane disinsectization treatment at hazardous airfields.

Hazardous adult beetle conditions associated with the movement of farm products was limited to a few sites in the Delaware-Maryland area, and in southwestern Virginia. Green beans are shipped to nearby Tennessee markets from the latter location.

Certification services throughout the year in this Region involved inspections of 25,800 acres of nursery and other premises, as well as 7,500 processing, industry and shipping sites. Also, the treatment of 8,900 acres of soil plots and the inspection or treatment of 18,300,000 commodity units were involved.



KHAPRA BEETLE

Fiscal Year 1961

Khapra beetle surveys were conducted in the Eastern Region in the states of Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont and Virginia. No evidence of khapra beetle was found in this survey covering a total of 1,600 properties.

Subsequent to discharge of cargo in a ship from India found infested in October 1960, the Plant Quarantine Division requested assistance in locating and treating a quantity of myrobalan nuts in transit from the port of entry, New York, to a tannery in Elkland, Pennsylvania. As a consequence, 19 railroad cars, 19 truck trailers and parts of the tannery premises were treated under the direction of State of Pennsylvania and Division personnel. One truck involved in the handling of this material was located at Corning, New York, where sanitation treatments were applied. No evidence of established infestation at the tannery or the Corning, New York location could be found.

In New York state, a shipment of steel was unloaded into gondola cars at Oswego from a ship in which cast skins of khapra beetle were found. No beetles were found on the steel. The ship was subsequently inspected at Chicago with positive finds and fumigated. The steel and cars were held intact at Oakfield and Canastota, New York and fumigated in cooperation with New York State as a precautionary measure.

SOYBEAN CYST NEMATODE

Fiscal Year 1961

Soybean cyst nematode was first found in Virginia in the fall of 1958. On August 21, 1961, the State was placed under Federal quarantine with regulatory action limited to infested properties. A paralleling State quarantine was issued and effective on the same date. At the close of the 1961 fiscal year, 221 properties were under Federal quarantine in parts of three counties: Isle of Wight, Nansemond and Southampton. Thirty additional properties in the same areas are under State regulation only, pending revision of the Federal quarantine.

During the 1960 summer season, symptom surveys were carried on in Nansemond and Southampton Counties. Twenty-six soil samples taken in Southampton County were negative. In Nansemond County, 540 samples were collected and 8 additional properties were found immediately after fall harvesting was completed. Later, the survey was extended into the southern end of Isle of Wight County. In the delimiting surveys, approximately 40,000 soil samples were collected, processed and examined at Franklin, Virginia.

Cooperative State-Federal regulatory measures were enforced to control the movement of farm machinery, equipment, and other products and articles considered to be a hazard in spreading soybean cyst nematode. Certain products such as peanuts grown on infested ground were permitted to move to processing plants under permit in accordance with conditions and safeguards set forth in written dealer-carrier agreements. More than 60,000 units of farm and other machinery and products were certified for movement from infested properties and 250 processing and industry sites were inspected.

The Virginia Agricultural Experiment Station, Holland, Virginia furnished personnel and facilities in connection with various cooperative program studies and experiments.

Limited surveys at selected sites were also carried out by the regular inspection force in the states of Delaware, Maryland, New Jersey and West Virginia, all with negative results. A total of 4,700 samples from 15,000 acres was collected in these four states.



WHITE-FRINGED BEETLE

Fiscal Year 1961

The white-fringed beetle was found in Virginia for the first time in Greensville County, adjacent to North Carolina, in October 1960. There were immediate delimiting surveys, resulting in the collection of 12 adult beetles. Detection surveys throughout Greensville County and extending into 7 adjoining counties were with negative results. During the fall of 1960 and spring of 1961, more than 250 acres were treated at the infested site and along the highway and railroad rights of way extending five miles north from the Virginia-North Carolina line.

Spot scouting at 100 properties in 18 West Virginia counties were with negative results.

In February 1961, the State of New Jersey removed quarantine restrictions which had applied in Vineland since 1954 when a localized infestation was discovered. Soil treatments were applied in 1955, and surveys during the past four seasons have been negative.



WITCHWEED (*Striga asiatica*)

Fiscal Year 1961

Witchweed is not known to occur in the Eastern Region. Limited detection surveys were made this fiscal year in nine states and the District of Columbia. Checks were made at suspect sites involving 2,000 properties covering 16,000 acres in Delaware, District of Columbia, Maine, Maryland, New Hampshire, New Jersey, Pennsylvania, Vermont, Virginia and West Virginia. Most of these observations were made in conjunction with other regular activities. The results were negative.

The only regulatory work performed in this area was in the District of Columbia at the laboratory of the Bureau of Public Roads, where a quantity of soil shipped in under permit from the witchweed area was fumigated.





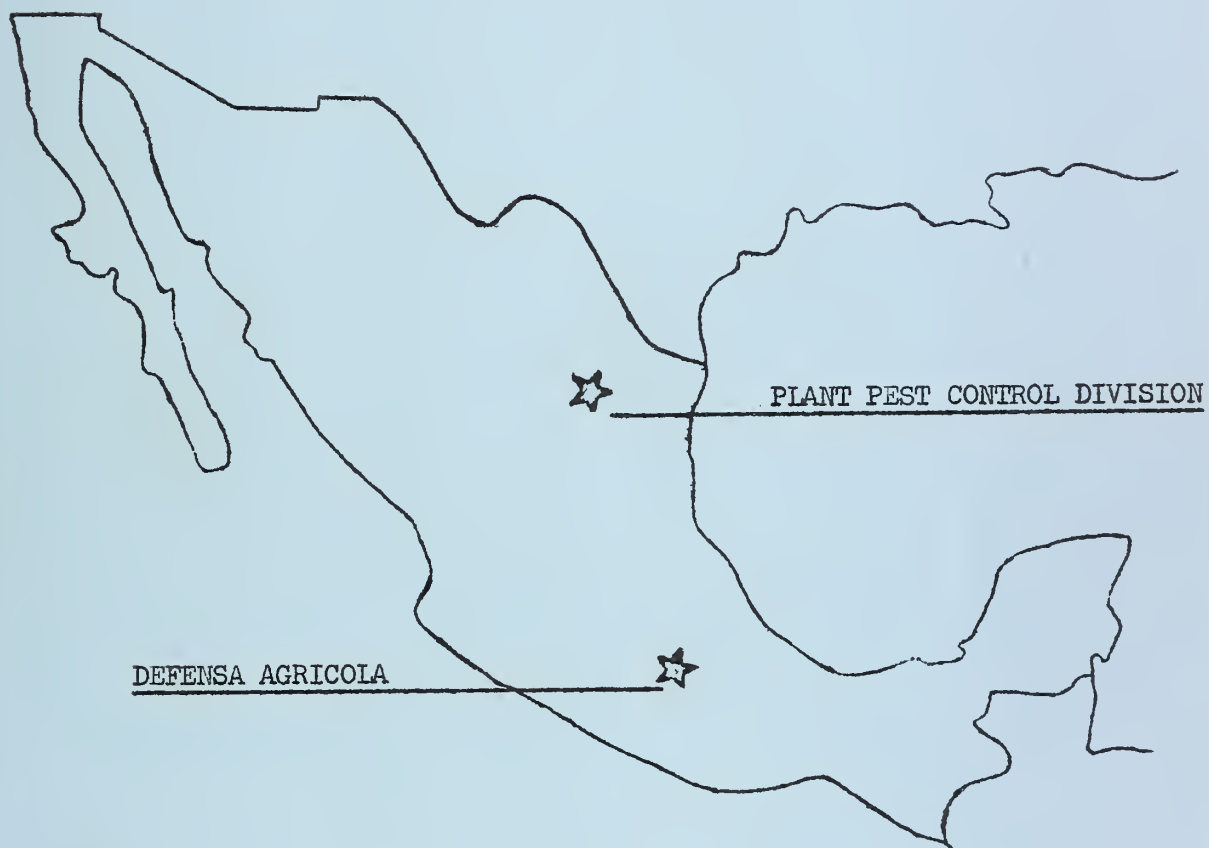


MEXICO REGION

PLANT PEST CONTROL DIVISION - A.R.S. - U.S.D.A.

IN COOPERATION WITH

DEFENSA AGRICOLA - S.A.G.



ANNUAL REPORT

FISCAL YEAR 1961

PLANT PEST CONTROL
COOPERATIVE PROGRAMS

MEXICO REGION

ANNUAL REPORT

FISCAL YEAR

1961

United States Department of Agriculture
Agricultural Research Service
Plant Pest Control Division



PLANT PEST CONTROL COOPERATIVE PROGRAMS

In accordance with our Memorandum of Understanding with Mexico, the Plant Pest Control Division of the United States Department of Agriculture and the Defensa Agricola of the Mexico Department of Agriculture and Livestock cooperated in the preparation of work plans for the execution and accomplishment of the Mexican Fruit Fly, Citrus Balckfly, Khapra Beetle, Mediterranean Fruit Fly and Pink Bollworm programs of the Mexico Region.

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MEXICAN FRUIT FLY

All of the regulatory activities of the Mexican Fruit Fly Eradication and Control Program in West Mexico are cooperative with the Mexican Defensa Agricola. Highway, railway, airport, and maritime inspections were maintained at strategic locations to prohibit the movement of quarantine products, as well as untreated host fruits, from infested areas of Mexico into the free area of the Northwest. Two fumigation chambers were operated, one at Benjamin Hill, Sonora, the other at Ensenada, Baja California, free of cost to the shippers, for the treatment of host fruits of the Mexican fruit fly. Seasonal inspections were conducted in the fruit markets of the principal cities for contraband shipments of host material.

Fruit fly traps were operated in the principal fruit growing areas of Baja California throughout the year. A total of 1,624 traps were baited and inspected once a week, resulting in the recovery of 13 Mexican fruit flies, A. ludens, in the Municipios of Ensenada and Tijuana, Baja California. Nine of these were taken in July, 1960 and four from April 12 through June 30, 1961. Locally grown fruits were examined from larval infestation in conjunction with the trapping operations, but the results were negative.

An intensive spray program was conducted at 21-day intervals from July 1, 1960 to October 18, 1960, by which time it is believed eradication was effected. The spray program was again initiated immediately after trapping of the first fly in April, 1961, and will continue at 21-day intervals for at least three applications from the date of trapping the last fly.

It is believed that this program will continue to be effective in detecting and eradicating light infestations of Mexican fruit flies in Northwest Mexico.



MEXICAN FRUIT FLY
CONTROL ACCOMPLISHMENTS

SUMMARY F. Y. 1961

STATE	PROPERTIES SPRAYED	I N S E C T I C I D E	
		Acres Treated	Number Treated
		Ground	Host Plants
Baja California	33,462	23,260	168,194
TOTAL:-	33,462	23,260	168,194

MEXICAN FRUIT FLY

SURVEY AND DETECTION

SUMMARY

F. Y. 1961

STATE	NUMBER SURVEYED	NUMBER OF		NUMBER INFESTED	
	Properties	Traps in Use	Positive Specimens	Properties	Acres
Baja California	251	1,624	13	13	5,600
TOTAL:-	251	1,624	13	13	5,600

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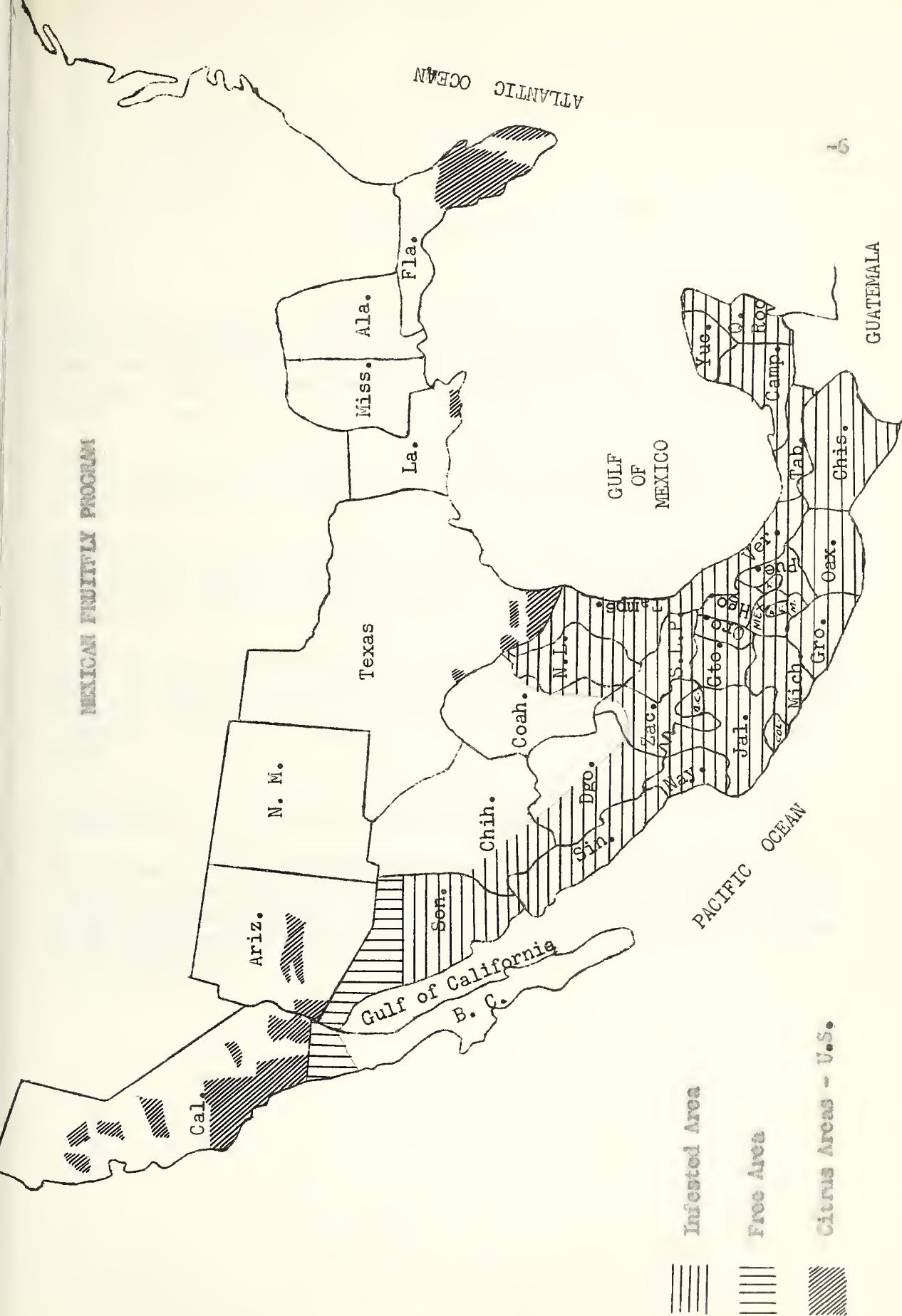
MEXICAN FRUIT FLY
REGULATORY ACTIVITY

SUMMARY

F. Y. 1961

STATE	COMMODITY TREATMENT QUANTITY (Plants, tons, boxes, etc.)
	Fumigated
Baja California	2,535
Sonora	76,644
Total	79,179

MEXICAN FRUITFLY PROGRAM





CITRUS BLACK FLY

In cooperation with the Mexican Government, citrus black fly survey, control and regulatory activities are carried out. Mexican citrus producing areas bordering on Texas, California, and Arizona citrus areas are kept free of citrus black fly. South of the free areas, citrus black fly populations are kept at a low level through biological control.

The free areas are subject to occasionally recurring infestations. Through survey for detection, these infestations are found and eradicated by spraying infested groves and a protective area around them.

During the past year, no citrus black fly infestations were found in the free areas of Baja California of Northern Sonora. However, in the free or chemical control area of Nuevo Leon, several infestations were found which were receiving spray applications at the end of the year.

There were 24,632 properties, and 1,012,091 trees inspected during the year. Of this total, 102 properties and 1,236 trees were found to be infested, all in the state of Nuevo Leon. All other inspections were negative. Spraying was done on a total of 883 properties and 178,618 trees.

During the year a total of 1,812,500 parasites and predators were - - liberated in the biological control zones south of the free areas.

Inspection stations, strategically located to intercept citrus black fly host material moving from infested to free zones, functioned well with numbers of interceptions being made. The exportation of citrus fruit from Mexico through the United States was supervised to prevent the introduction of infested leaves.



CITRUS BLACKFLY

CONTROL ACCOMPLISHMENTS

SUMMARY

F. Y. 1961

STATE	INSECTICIDE TREATMENT	
	Properties Sprayed (Ground)	Host Plants Sprayed
Nuevo Leon	883	178,618
TOTAL	883	178,618

CITRUS BLACKFLY

SURVEY AND DETECTION

F. Y. 1961

SUMMARY

STATE	Number Surveyed		Number Infested	
	Properties	Hosts Examined	Properties	Hosts
Nuevo Leon	8,782	762,866	102	1,236
Tamaulipas	8,298	82,601	0	0
Sonora	4,844	156,476	0	0
Baja California	2,591	10,148	0	0
TOTAL:-	24,515	1,012,091	102	1,236



CITRUS BLACKFLY
REGULATORY ACTIVITY

SUMMARY

F.Y. 1961

STATE	INSPECTION FOR CERTIFICATION	
	Processing Plants	Other
Nuevo Leon	405	880
TOTAL:-	405	880



CITRUS BLACKFLY

COLONIZATION OF PARASITES AND PREDATORS

F.Y. 1961

STATE	P A R A S I T E S			PREDATORS
	Prospaltella opulenta	Prospaltella clypealis	Amitus hesperidum	Delphastus pusillus
Nayarit	100,700	53,200		
Guerrero	129,700			
Territory Baja California	33,300			
Chiapas	252,100	78,800		7,200
Campeche	981,600	58,600	24,800	1,200
Michoacan	45,000			
Tabasco			46,300	
TOTAL:	1,542,400	190,600	71,100	8,400

[illegible]

Trusted Area, Under
Biological Control

offer areas to be kept free to prevent spread. Occasional Incipient Infestation found and eradicated.

Free Area Periodically Inspected.

Commercial Citrus Growing Areas United States

Local Inspection Stations
Operated by Defensa Agrícola



KHAPRA BEETLE

The khapra beetle program in Mexico is conducted cooperatively with the Mexican Defensa Agricola, in all of its aspects.

States in Mexico where detection surveys were made during the year included Baja California, Sonora, Jalisco and Chihuahua. There was a total of 1,322 properties inspected, and 362 specimen collections were submitted. As a result of these surveys, three properties in comprising a total of 633,003 cubic feet in Altar, Sonora were found to be infested. These infested properties were found near the end of the year, and were the first infestations of khapra to be found for more than two years in Mexico. It was anticipated that these properties would be fumigated early in fiscal year 62.

Regulatory activities include periodic checks of used sack establishments in Mexicali, B.C. to determine compliance with the regulation requiring that all used sacks be fumigated when received. Strict regulatory measures are likewise enforced in the Juarez Valley of Chihuahua.

Supervision was given for the standard Methyl Bromide fumigation of all grain loaded in box cars, prior to shipment from the Mexicali Valley to the interior of Mexico.



KHAPRA BEETLE
SURVEY AND DETECTION

SUMMARY

F. Y. 1961

STATE	NUMBER SURVEYED	NUMBER INFESTED	
	Properties	Properties	Cubic Feet
Baja California	929	0	0
Sonora	159	3	633,003
Jalisco	5	0	0
Chihuahua	229	0	0
TOTAL:-	1,322	3	633,003



KHAPRA BEETLE
REGULATORY ACTIVITY

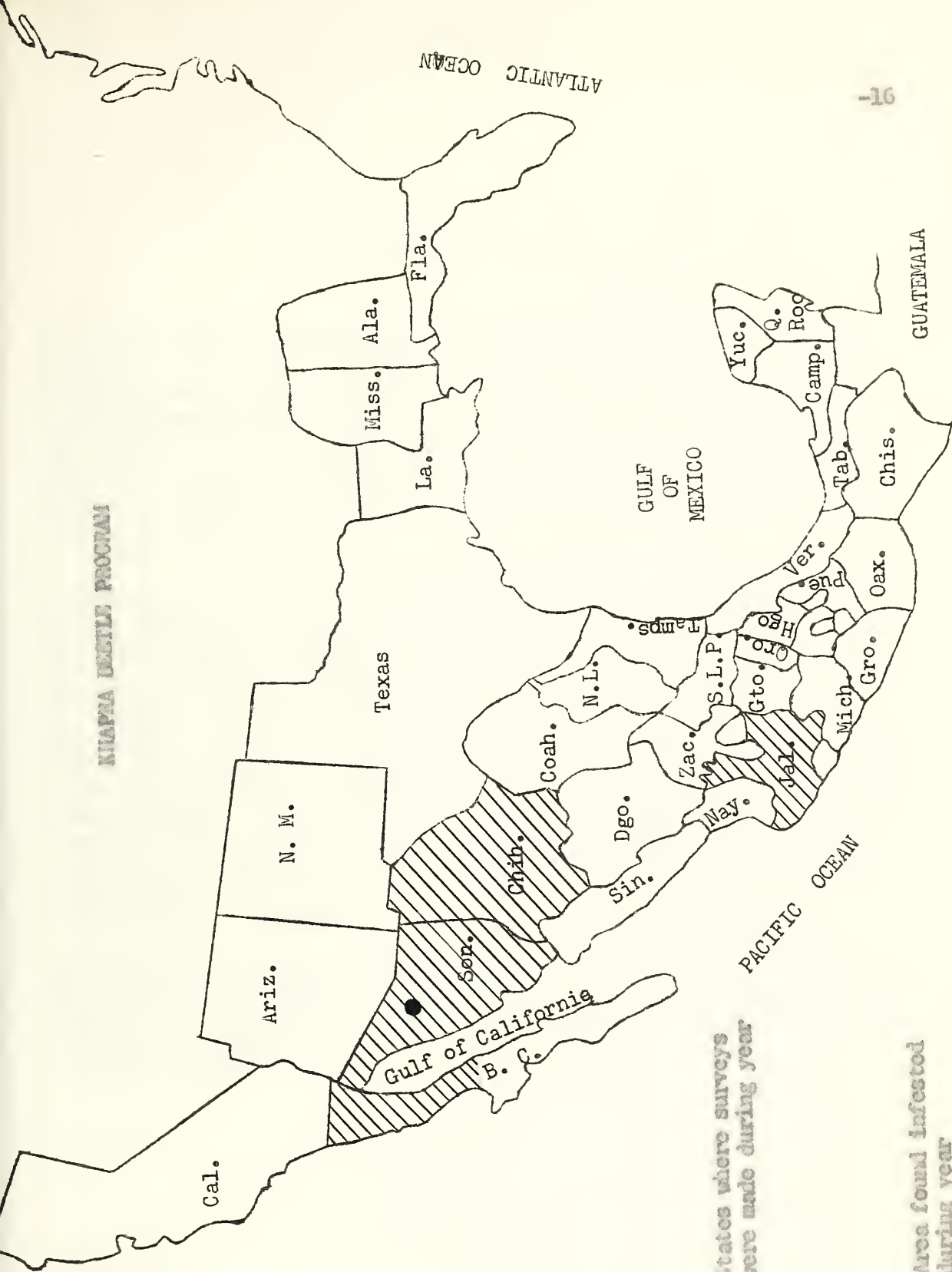
SUMMARY

F.Y. 1961

STATE	Number of Properties	Commodity Treatment Quantity (Plants, ton, bales,etc).
		Fumigated
Sonora	3	7,704
Total:-	3	7,704

KILAPPA DISEASE PROGRAM

-16



States where surveys
were made during year

Area found infested
during year





MEDITERRANEAN FRUIT FLY

In April of 1955 the Mediterranean fruit fly was first discovered in Costa Rica. This was the only known infestation of the Mediterranean fruit fly in the Central American countries until April 1959 when it was found in Nicaragua. The control program undertaken in Nicaragua as a result of these findings apparently resulted in eradication. - However, in January 1960, Med flies were found again in Nicaragua along the Pan-American highway and delimiting trapping operations revealed a well established infestation in a rather large area south of Managua, Nicaragua.

Officials of the Departments of Agriculture of the United States and Mexico viewed this situation with concern. The fact that the Pan-American highway through Central America entered Mexico at the State of Chiapas, Mexico, obviously offered considerable opportunity for entry of the Mediterranean fruit fly into Mexico through the agency of tourists and other travelers from Central America into Mexico. - Manifestly, an established infestation of Mediterranean fruit fly in Mexico would result in a serious situation for the agriculture of that country, and would be a definite threat to agriculture of the United States as well. Officials of the two countries met and agreed to work together cooperatively in Mexico to carry out and maintain a program of survey for detection in those areas of Mexico considered more vulnerable to entry of the fly, with particular emphasis on trapping in the State of Chiapas.

The cooperative survey for detection got under way in Chiapas in September. The past year a peak total of 1,848 Steiner traps were in operation in the State of Chiapas where a succession of Med fruit fly hosts are in abundance. At the end of the year, all results of trapping had been negative.



MEDITERRANEAN FRUIT FLY

SURVEY AND DETECTION

SUMMARY

F.Y. 1961

STATE	Number of	
	traps in use	Positive Specimens
Chiapas	1,848	0
TOTAL:-	1,848	0



PINK BOLLWORM

The PPCD in cooperation with the Defensa Agricola of the Mexican Government, carry out the several activities of the pink bollworm program in Mexico.

West Mexico is not known to be infested by the pink bollworm, however, East Mexico is generally infested.

Generally, pink bollworm populations were lighter in comparison with the past year, although some commercial damage to the cotton crop was sustained in the Laguna area of the states of Coahuila and Durango. In the Culiacan, Sinaloa eradication area, three years were completed in October without finding pink bollworm, and the area was declared to be free of pink bollworm.

Surveys for detection were made in the West Coast of Mexico and included inspection of gin trash, blooms, light traps, and lint cleaners. Emphasis was given to gin trash inspection, particularly for gin trash originating in those areas of Baja California and Northern Sonora in proximity to the pink bollworm infestations in Arizona.

Field insecticide demonstration tests were initiated in the Laguna area as a methods improvement program for pink bollworm control at the end of the year. In these tests, Guthion, Sevin and a BHC, DDT, sulfur mixture are being used, with DDT serving as a comparison.

Regulatory activity included gin and oil mill supervisions in East Mexico as a requisite for certification of their products for movement into the United States for export. Also some Mexico West Coast cotton oil mills were certified for movement of cotton seed hulls to the United States. Inspection stations were operated in West Mexico and considerable pink bollworm host material moving from infested to free areas was intercepted and destroyed or fumigated.

Control procedures for the Culiacan area as well as East Mexico included the establishment of planting periods and stalk destruction dates followed by deep plowing.



PINK BOLLWORM
CONTROL ACCOMPLISHMENT
SUMMARY

F.Y. 1961

STATE	MECHANICAL
	Number Treated
	Acres
Chihuahua	241,056
Coahuila	153,500
Durango	106,665
Nuevo Leon	37,285
Tamaulipas	679,840
TOTAL:-	1,218,346



PINK BOLLWORM

CORRECTED COPY

SURVEY AND DETECTION

SUMMARY

F. Y. 1961

STATE	NUMBER SURVEYED		NUMBER			NUMBER INFESTED	
	Properties	Acres	Traps	Trap Collections	Positive Specimens	Properties	Acres
Chihuahua	167	6,273			519	83	2,864
Coahuila	113	12,323			235	112	10,091
Durango	149	12,765			693	149	12,765
Nuevo Leon	194	5,552			219	42	1,271
Tamaulipas	823	35,571			1,016	277	13,458
Sinaloa	284	118,392	1	46	0		
Sonora	197	441,011	15	1,529	0		
Baja California	136	288,203	14	1,749	0		
TOTAL:	2,063	920,090	30	3,324	2,682	663	40,449

PINK BOLLWORM

SURVEY AND DETECTION

DETAILED SUMMARY

F. Y. 1961

West Mexico Protective Zone

STATE	I N S P E C T I O N S							Traps in Use
	Bushels Gin Trash	Lint Cleaner	Bloom	Boll	Squares	Trap Collections	PBW Found	
Baja California	22,619	4,505	155,094	34		1,749	0	14
Sonora	14,925	2,587	932,861	1,282		1,529	0	15
Sinaloa	2,682	287	740,218	2,465	1,040	46	0	1
TOTAL:-	40,226	7,379	1,828,173	3,781	1,040	3,324	0	30



PINK BOLLWORM

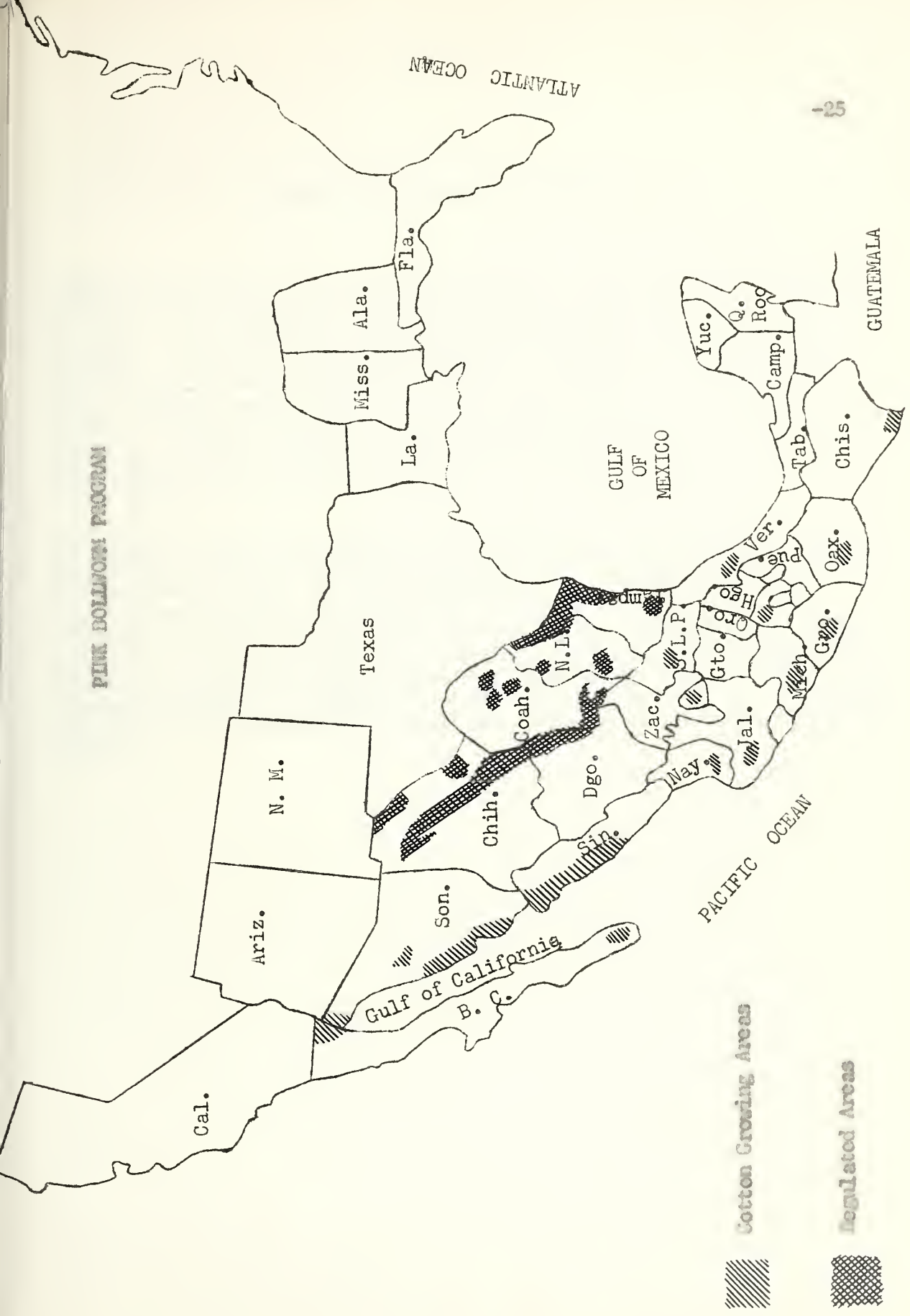
REGULATORY ACTIVITY

F.Y. 1961

SUMMARY

STATE	INSPECTION FOR CERTIFICATION Processing Plants	COMMODITY TREATMENT Quantity (Plants, tons, bales, etc.)		
		Fumigated	Heated	Other
Chihuahua	261			
Durango	405			
Coahuila	508		5,710	
Nuevo Leon	193		6,070	
Tamaulipas	6,808		147,784	
Sinaloa		18		1,752
Sonora		1,542		66
Baja California		887		48
TOTAL	8,175	2,447	159,564	1,856

PINK BOLLWORM PROGRAM





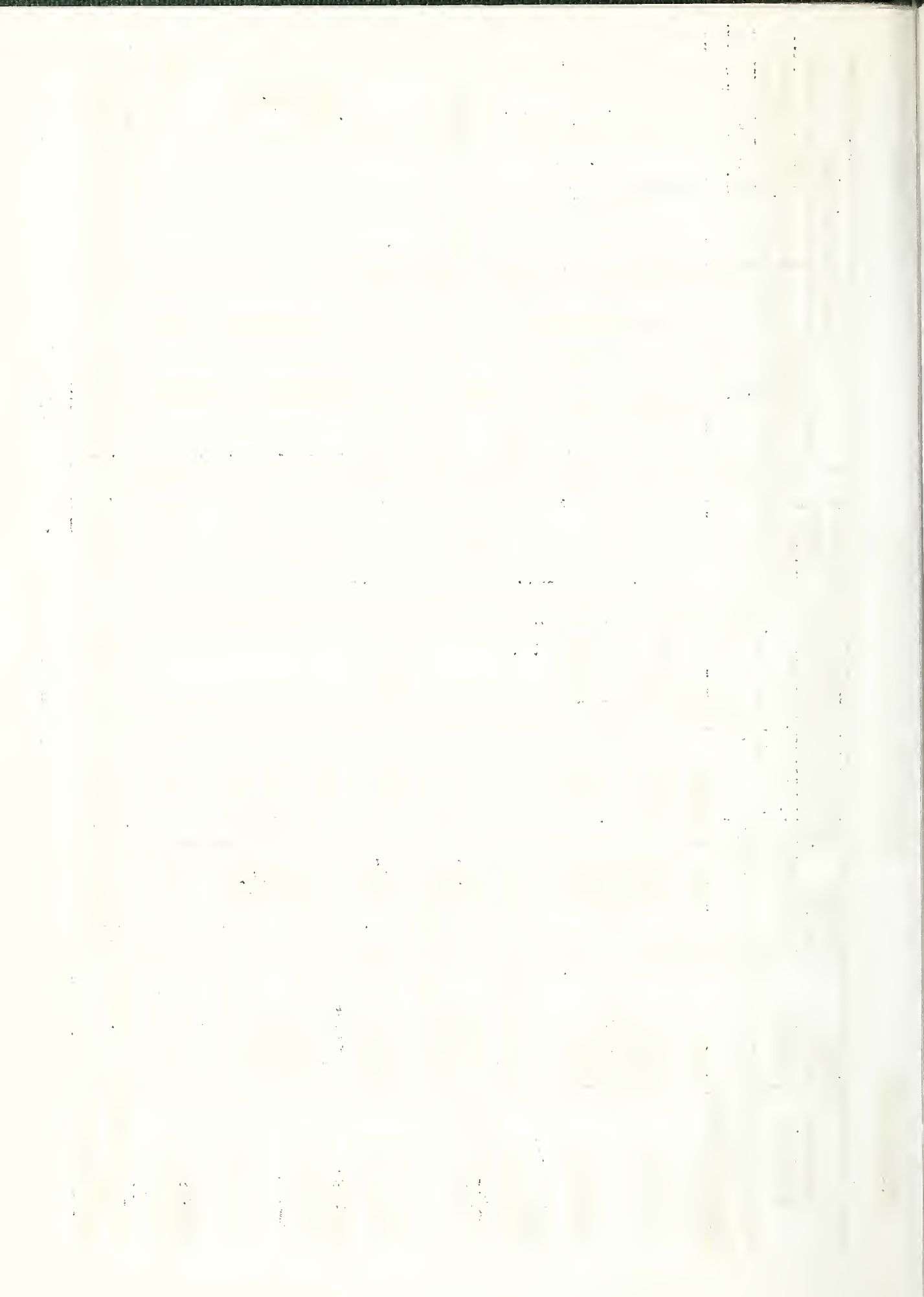
COOPERATIVE INSPECTION STATIONS

Inspection stations, as a cooperative endeavor with the Defensa Agricola of Mexico, were continued in operation in the West Mexico area during the year. The inspection stations, strategically located at airports, seaports, railroad terminals and highways, continued to fulfill their objective. The entire area of West Mexico was kept free of pink bollworm. Northern Sonora and all of Baja California were free of citrus blackfly. A limited amount of contraband Mexican fruit fly host material apparently made its way into the Tijuana and Ensenada B.C. areas where it was necessary to spray to eradicate an incipient infestation.

All types of traffic, vehicular and passenger, including braceros, were inspected and a substantial amount of pink bollworm, citrus blackfly and Mexican fruit fly host material intercepted. Much of this material was infested. Trucks and box cars found contaminated with pink bollworm host material were either cleaned or fumigated. In addition, at Benjamin Hill, Sonora, and at Ensenada, B.C., many commercial shipments of citrus, mangoes, plums, and guavas were fumigated with ethylene dibromide to allow these fruits to move from the south of Mexico into Northern Sonora and Baja California, free of the Mexican fruit fly hazard.



Inspection Stations	Type of Inspection	Number of Inspections	Number of Passengers & Bracerros	Pieces of Baggage & Express	RR Cars & Trucks Cleaned & or Fumigated	Host Interceptions					
						Occasions			Items		
						MFF	CBF	PEW	MFF	CBF	PEW
<u>BAJA CALIFORNIA</u>											
Tijuana	Plane	1,783	31,986	135,602		741	88	8			
Mexicali	Plane Trucks Railroad	651 766 9,074	12,261	43,351		174	1	2			
Ensenada	Plane Boat	269 194	615 446	33,791 1,297	43	20	4	40	63	2	1
<u>SONORA</u>											
San Luis	Rd. Station	33,649			7	2,853	76	57			
Benjamin Hill	RR Cars Trains Rd. Station	7,529 634 177,148	181,885		1,888 40	36,014	484	705	56,985	125	5,809
Nogales	Plane RR Mkt. Mail	773 634	7,572	17,788		120 429	3 4	15 35			
<u>SINALOA</u>											
Mazatlan	Rd. Station Plane Trains Boat	72,639 1,156 790 230	77,789 30,862 39,735		1,055 154 500						1,732 11 198 86 525
Terreros	Rd. Station	20,024									
<u>DURANGO</u>											
El Salto	Rd. Station	5,040	308		141						127 67
TOTAL		332,983	383,459	231,829	3,828	40,374	665	862	57,048	127	8,429



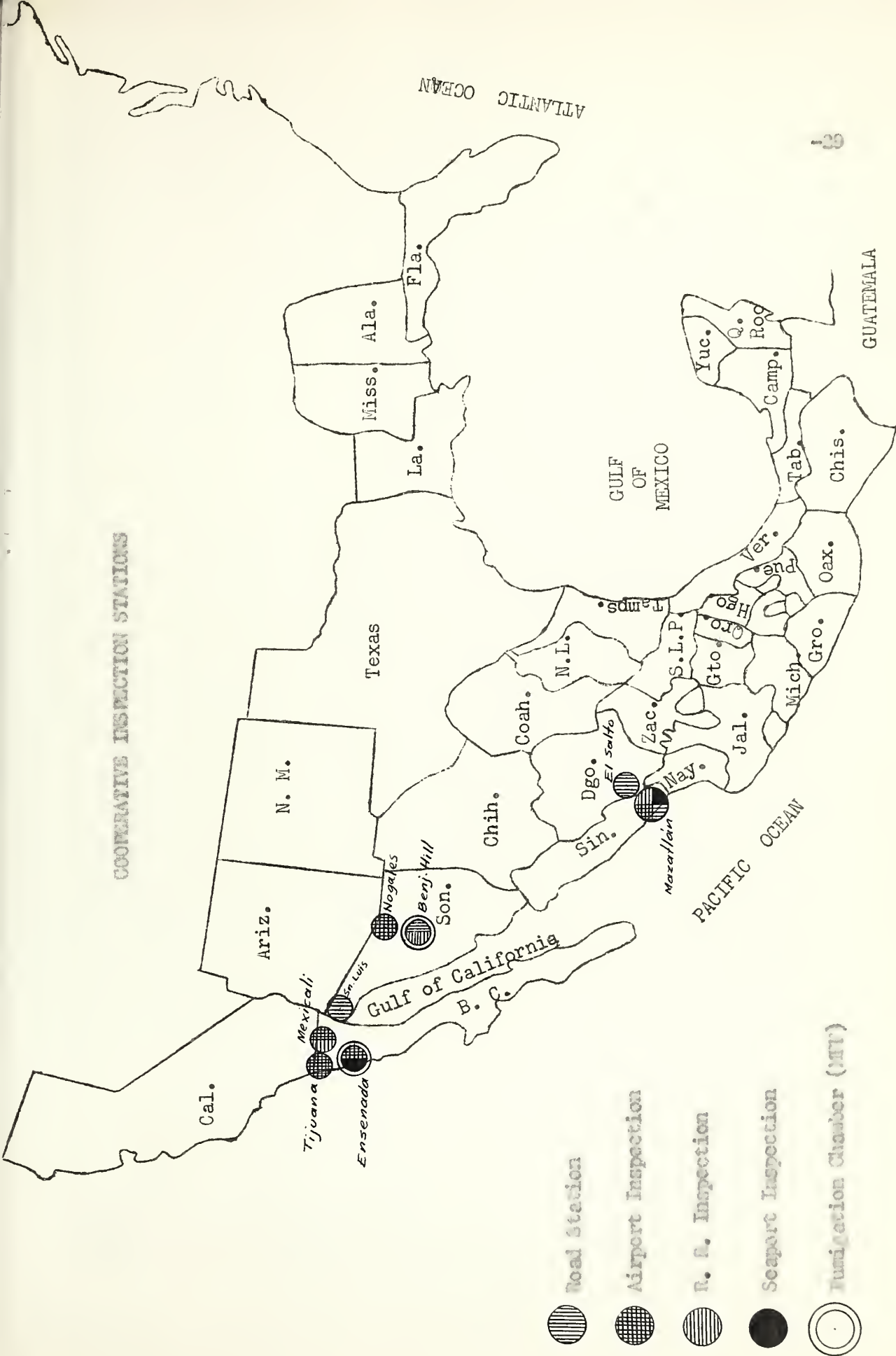
FUMIGATION OF FRUIT

F.Y. 1961

Location	Kilos of Fruits Fumigated						
	Mangoes	Oranges	Sweet Limes	Plums	Grapefruit	Tangerines	Total
SONORA Benjamin Hill	1,192,992	1,136,801	33,600	59,690	6,960	1,190	2,431,233
BAJA CALIFORNIA Ensenada	*						
TOTAL	1,192,992	1,136,801	33,600	59,690	6,960	1,190	2,431,233

* 5,914 boxes of mangoes, weight not mentioned.

COOPERATIVE INSPECTION STATIONS



Road Station

Airport Inspection

R. R. Inspection

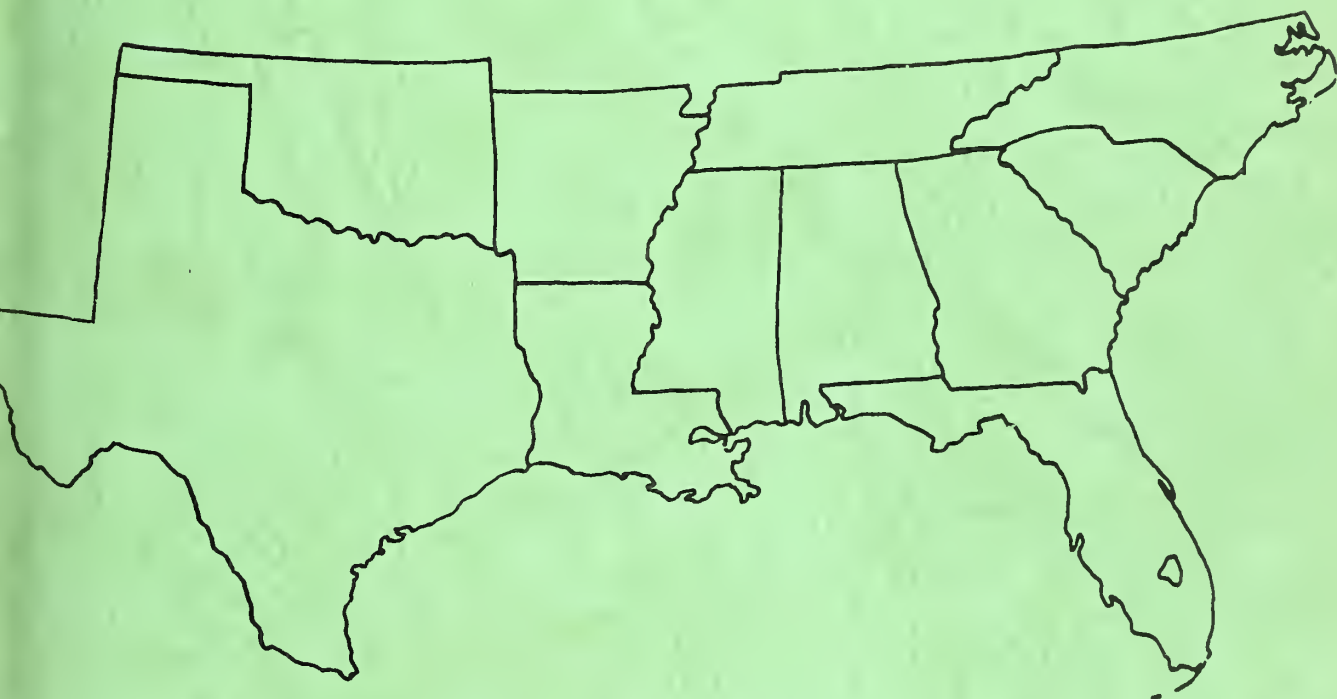
Seaport Inspection

Immigration Chamber (MTI)



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

- SOUTHERN REGION -



ANNUAL REPORT
- 1961 -

Gulfport, Miss.



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BARBERRY INSPECTION

As Barberry eradication is not carried on in the Southern Region, the only activity on this program is the inspection and certification of nurseries and dealers who handle Barberry or Mahonia on an interstate basis. The purpose of the inspection is to make sure that only rust-resistant species of Barberry or Mahonia are grown or handled, so there will be no possibility of reintroducing rust susceptible species, through the movement of nursery stock, into states where an eradication program is in effect.

During the year, inspections were made of 108 nurseries and 12 dealers. No rust susceptible plants were found in their stock and all were issued certificates of inspection.

U. S. DEPARTMENT OF AGRICULTURE AGRICULTURAL RESEARCH SERVICE PLANT PEST CONTROL DIVISION										STATE		DISTRICT		REGION				
REGULATORY ACTIVITY REPORT										PROGRAM		Barberry Eradication		REPORTING PERIOD (From-To)				
										7/1/60 - 6/30/61								
STATE	A	09 NUMBER OF PLANTS TREATED	INSPECTION FOR CERTIFICATION				ACRES TREATED FOR CERTIFICATION PURPOSES				CLASS OF COMMODITY K	COMMODITY TREATMENT QUANTITY (plants, tons, bags, etc.)						
			01 NURSERY	02 OTHER	03 PROCESSING PLANTS	04 SHIPPING POINTS	05 INDUSTRY SITES	06 OTHER	07 SOIL	08 FOLIAGE		* 11-19 FUMIGATED L	* 21-29 DIPPED M	* 31-39 SOAKED N	* 41-49 HEATED O	* 51-59 OTHER P		
Alabama		23									2							
Arkansas		3																
Florida		3																
Georgia		9																
Louisiana		9									1							
Mississippi		4									5							
North Carolina		6																
Oklahoma		8																
South Carolina		3																
Tennessee		31									2							
Texas		7									4							
TOTAL FROM JULY 1		106	*								14							

* Complete data for nursery acreage not available.

* Segment of operation

Personnel in Florida was at a reduced level at the beginning of the fiscal year awaiting final determination of the tree-in-place Nemagon treatments which were initiated earlier. During September, the number of Federal personnel was increased to the extent necessary to take over the survey of all ornamental nurseries located in Palm Beach and Dade Counties, Florida, to allow sampling of replants, and to conduct a limited general survey in order to maintain laboratory processing slightly in excess of 100,000 samples annually.

Before the end of the first half of the fiscal year, evidence was mounting which indicated that the Nemagon tree-in-place treatments held little possibility for eradication of the burrowing nematode and the growers' interest increased in the push and treat program. Leaders in the burrowing nematode program realized that some new approach must be developed that would halt the spread of the pest on an area basis throughout the industry. The Citrus Experiment Station, Minute Maid Corporation, Waverly Growers, and others had installed some barriers prior to the court injunctions on the push and treat program as experiments to test the worth of barriers and to prevent as much spread as possible until their infested properties could be pushed and treated. The information gained from a study of these early barriers, most of which were installed on the basis of visual symptoms, furnished the basis for the present program to encircle all areas of decline with a buffer or barrier. Surveys were made of these barriers and new barriers were installed as needed on the basis of delimiting surveys. In order to learn as much as possible before initiating a barrier program, factors such as width of the barrier, weed control, fumigants, and equipment for installing and maintaining these barriers were studied. At the close of the fiscal year, a new program had evolved that could be generally accepted by the citrus industry. The new program is designed to encircle all infestations of burrowing nematode in commercial citrus plantings with a chemical barrier and with little tree destruction. The barriers are being supplemented with a strong regulatory program, which involves the movement of citrus nursery stock, ornamental plants, and other articles capable of spreading the burrowing nematode. For the first time since the original appeal to the Supreme Court against the push and treat program, the Burrowing Nematode Program is designed to stop the spread of the pest on an area basis, and it is extensive enough to control the pest throughout the citrus industry. Although the program calls for long-range planning, the objective is eradication of the pest in the commercial citrus producing areas. The first phase of the program is to stop further spread of the pest through regulatory action.

During May, the burrowing nematode was discovered in Texas, and investigations revealed that the infestation was established as a result of movement of plants from the state of Florida. Personnel from Florida were detailed to Texas to assist in determining the extent of the infestation and the problem involved. As a result of this survey, infestations were found in Dallas, Tarrant, Ellis, Cameron, and Hidalgo Counties, Texas.

1. The first of the three main types of aircraft carrier is the fleet carrier, which is the largest and most powerful. It is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The fleet carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

2. The second type of aircraft carrier is the attack carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The attack carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

3. The third type of aircraft carrier is the transport carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The transport carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

4. The fourth type of aircraft carrier is the command carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The command carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

5. The fifth type of aircraft carrier is the training carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The training carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

6. The sixth type of aircraft carrier is the auxiliary carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The auxiliary carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

7. The seventh type of aircraft carrier is the hospital carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The hospital carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

8. The eighth type of aircraft carrier is the transport carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The transport carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

9. The ninth type of aircraft carrier is the command carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The command carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

10. The tenth type of aircraft carrier is the training carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The training carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

11. The eleventh type of aircraft carrier is the auxiliary carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The auxiliary carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

12. The twelfth type of aircraft carrier is the hospital carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The hospital carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

13. The thirteenth type of aircraft carrier is the transport carrier, which is designed to carry and launch a large number of aircraft, and to provide a base of operations for them. The transport carrier is the backbone of the carrier battle group, and is the most visible and powerful element of the fleet.

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION REPORT

STATE

DISTRICT

REGION

Southern

REPORTING PERIOD (From-To)

7/1/60 - 6/30/61

Burrowing Nematode

SURVEYED

INFESTED

41 NUMBER PROPERTIES SURVEYED	42 NUMBER SQ. MILES	43 NUMBER ACRES
2,210	38,709	
79	742	

44 NUMBER TRAPS IN USE	45 NUMBER HOSTS EXAMINED	46 NUMBER SAMPLES COLLECTED	47 NUMBER POSITIVE SPECIMENS	48 NUMBER PROPERTIES	49 NUMBER CUBIC FEET	50 NUMBER ACRES	51 NUMBER HOSTS	52 NUMBER CITY
		111276		205		558		
		684	27	7		17		

Florida

Texas

TOTAL
FROM JULY 1

39,451

2,289

111960

212

575



REGULATORY ACTIVITY REPORT

DISTRICT

REGION

Southern

REPORTING PERIOD (From To)

Burrowing Nematode

7/1/60 - 6/30/61

* Segment of operation.



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Burrowing Nematode

SUMMARY OF ASSOCIATED ACTIVITIES

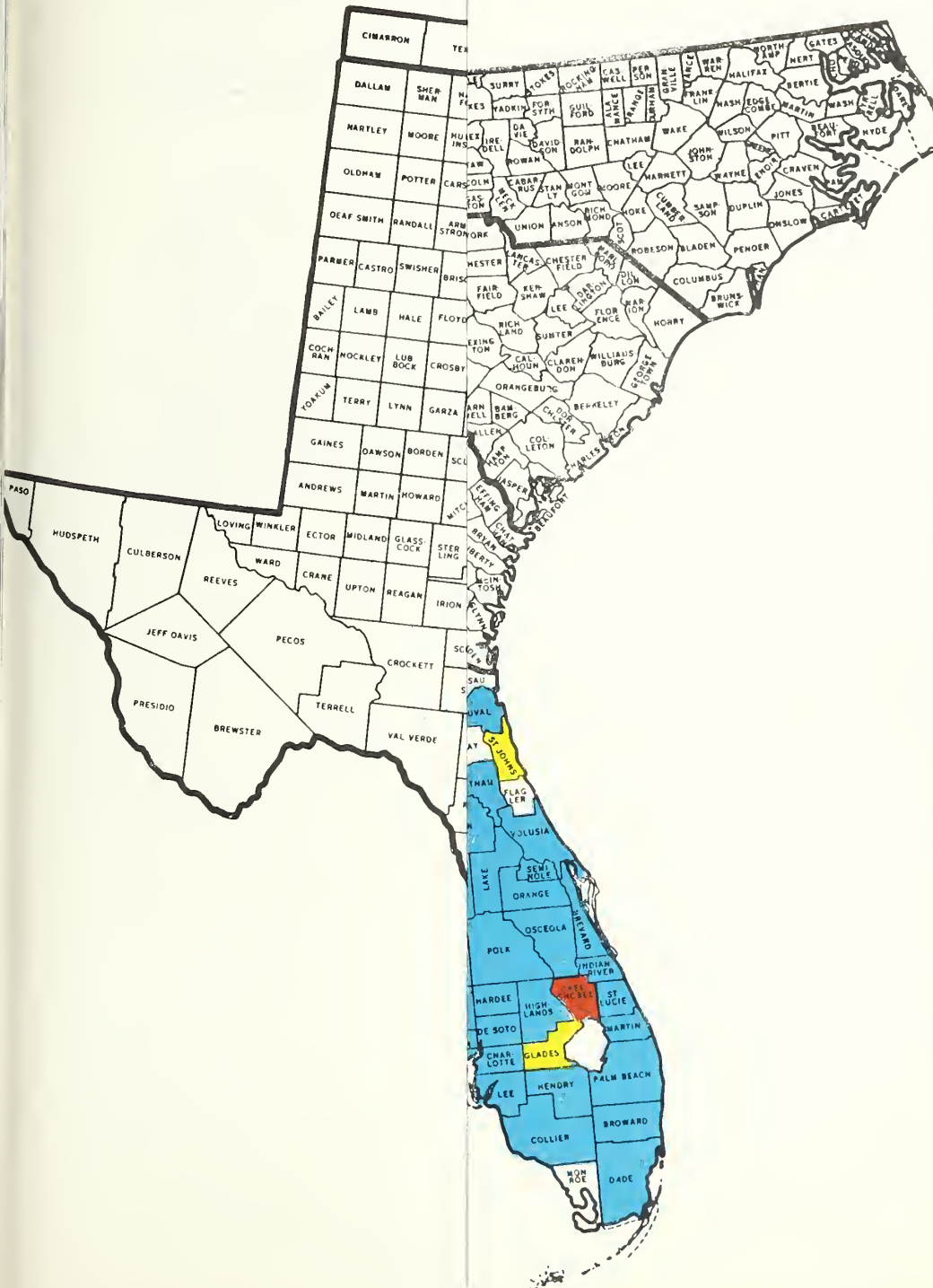
Prepared by: _____

Region Southern

Fiscal year 1961

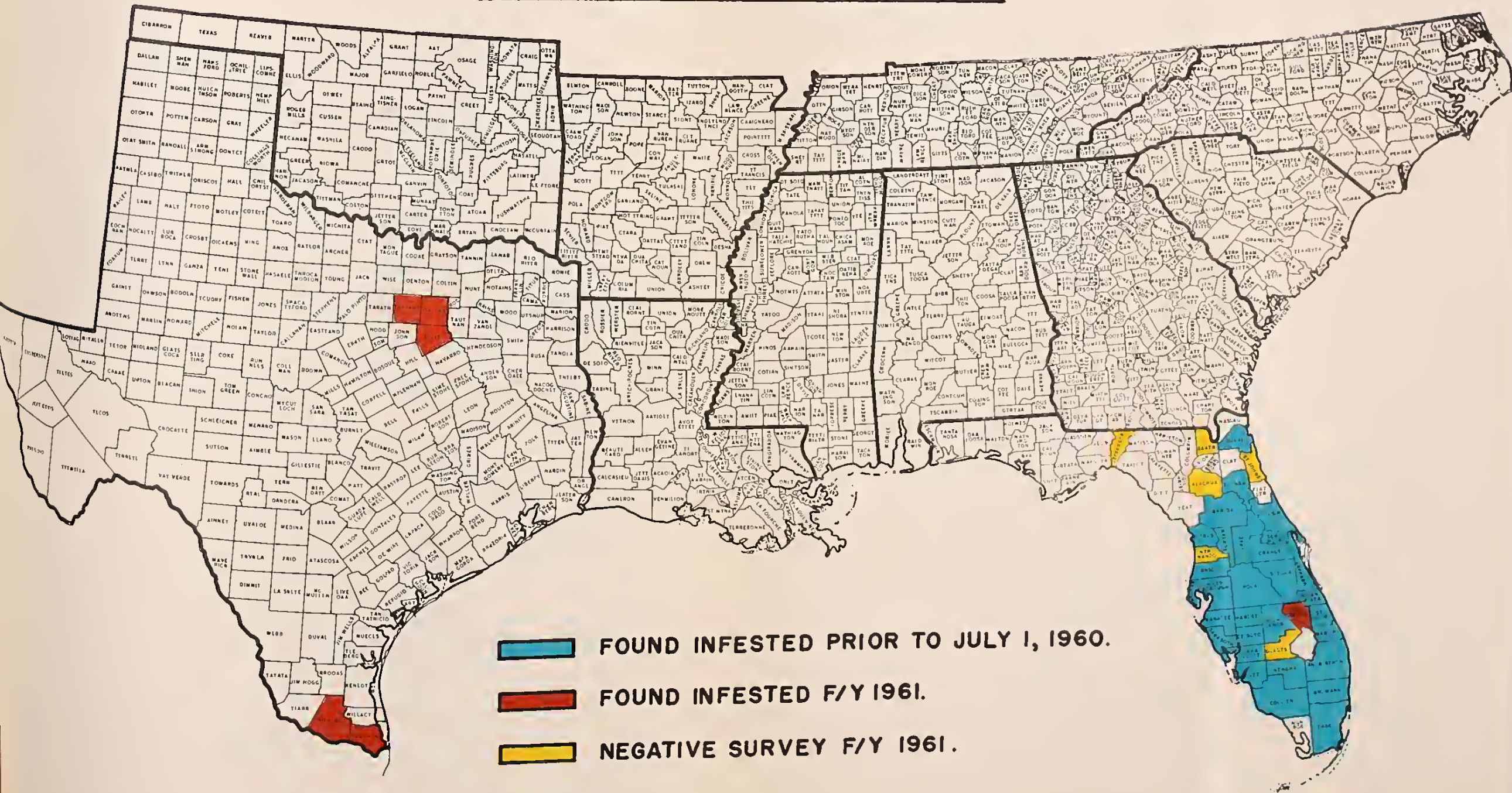
Area	Public Meetings Attended	P r e s e n t a t i o n s				Feature & News Stories*	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV	Exhibits	Bul.	Cir.	Infest. Maps & Posters	
Florida	11	14	4	1	32		8	89	65	13	2
Texas											
Total	11	14	4	1	32		8	89	65	13	2





UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

BURROWING NEMATODE



SECRET

The following information was obtained from a review of the files of the Central Intelligence Agency, Department of Defense, and the Department of State, and is being furnished to you for your information. It is to be understood that this information is being furnished to you in confidence and is not to be distributed outside your agency without the express approval of the Central Intelligence Agency, Department of Defense, and the Department of State.

The information contained in this document is classified "Secret" and is being furnished to you in confidence. It is to be understood that this information is being furnished to you in confidence and is not to be distributed outside your agency without the express approval of the Central Intelligence Agency, Department of Defense, and the Department of State.

SURVEY AND DETECTION REPORT

DISTRICT

Southern

ಪೂರ್ವಾಧಿಕಾರಿಗಳ ಸಂಖ್ಯೆ (ಪೂರ್ವಾಧಿಕಾರಿಗಳ)

7/1/60 - 6/30/61

Citrus Blackfly

SURVEYED

NUMBER
PROPERTY

02
NUMBER
SQ. MILES

33
NUMBER
ACRES

NUMBER
24

NUMBER	HOSTS	EXAMINED
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
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34	34	34
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36	36	36
37	37	37
38	38	38
39	39	39
40	40	40
41	41	41
42	42	42
43	43	43
44	44	44
45	45	45
46	46	46
47	47	47
48	48	48
49	49	49
50	50	50
51	51	51
52	52	52
53	53	53
54	54	54
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56	56	56
57	57	57
58	58	58
59	59	59
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61	61	61
62	62	62
63	63	63
64	64	64
65	65	65
66	66	66
67	67	67
68	68	68
69	69	69
70	70	70
71	71	71
72	72	72
73	73	73
74	74	74
75	75	75
76	76	76
77	77	77
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79	79	79
80	80	80
81	81	81
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84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

NUMBER
SAMPLES
COLLECTED

NUMBER
POSITIVE
RECTIONS

00
NUMBER
PROPERTIES

○ビエリニ

50

STROM
LITHIUM
15

2015

8,188

164, 226

Texas

8,188

164,226

**TOTAL
FROM JULY !**



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Citrus Blackfly

SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by: _____

Region Southern

Fiscal year 1961

Area	Public Meetings Attended	P r e s e n t a t i o n s				Feature & News Stories*	Extent These Aids Were Used			Infest. Maps & Posters	Special Reports
		Talks	Slides	Films	Radio	TV	Exhibits	Bul.	Cir.		
Texas			1								
Total			1								



This program consists of two phases; namely, economic insect survey and special surveys. The former deals with the work of survey entomologists and pertains principally to the varying abundance, threatening populations, and other matters of interest to the public involving insects of economic importance which are generally present in a given area. Special surveys pertain to specific pests, frequently in a restricted portion of the region, following a similar pattern year after year. Detection surveys are for specific pests for which we have no designated appropriation and which are definite threats to a substantial portion of the nation's economy.

During the fiscal year, slightly more than 500 weekly reports on economic insect conditions were submitted. In addition, practically every state submitted summaries of insect conditions for the calendar year 1960, as well as loss estimates for specific insects or insect complexes during the same year. Formal agreements were in effect during all or part of the year with eight states, and excellent cooperation was received from the three states who did not employ survey entomologists as such. Division personnel have been making more observations on insect conditions and submitting information so obtained to the state clearinghouses in increasing quantity and quality.

Special surveys were conducted as follows:

Beet Leafhopper and Potato Psyllid

These two surveys were conducted simultaneously in western Texas and a small portion of New Mexico during February and March. The largest population of beet leafhoppers recorded since the survey began several years ago was noted in the vicinity of El Paso, Texas. Otherwise, there were only slight shifts in population in the 48 counties surveyed. The potato psyllid survey covered the same general area and populations encountered were comparable to those of last year. This is the first season in which this survey was extended into the state of New Mexico. Personnel from the State and the Western Region assisted in this work.

Boll Weevil

The usual boll weevil hibernation survey was conducted in the cotton-producing states east of the Mississippi River. Field debris was collected where possible by Division personnel and given to the Experiment Stations at Florence, South Carolina, and Stoneville, Mississippi. No major changes were noted in the populations in the fall of 1960.

A boll weevil distribution and abundance survey was conducted during the winter in the Upper Rio Grande Valley of Texas. This work was in cooperation with Texas A & M College and the National Cotton Council. It was preparatory to an experimental boll weevil control program to be conducted next fiscal year.



(Cooperative Economic Insect Survey and Detection, cont'd)

Chinch Bug

Chinch bug surveys were conducted in Oklahoma and Arkansas. Very severe populations were noted in Washington and Cotton Counties, Oklahoma, with severe infestations in a spotted pattern in five other counties. Moderate infestations were found in five counties in Oklahoma and two counties in Arkansas.

European Corn Borer

A systematic survey was made for this pest in 15 northeastern counties in Texas during August of 1960. This was prompted by the finding of a single specimen during the preceding fiscal year. No European corn borers were found during the survey in Texas. The usual fall abundance survey was conducted largely by state personnel in the other states. Some assistance was given by Division personnel where possible. The results of these surveys are reported in the weekly Economic Insect Report during the winter months.

Hoja Blanca

Surveys are conducted throughout the rice-growing area annually for the hoja blanca disease of rice and its principal vector, Sogatia orizicola. An attempt is made to survey about 5 percent of the acreage throughout the rice-growing belt and to increase this to about 20 percent in the vicinity of previous infestations. Neither the disease nor its vector was found in the rice-producing areas of Texas, Louisiana, Mississippi, Georgia, South Carolina, and Arkansas. On Rabbit Island, Florida, a few volunteer rice plants were found which were believed to be infected with the disease but no positive identification could be made. An unsuccessful attempt was made by research workers to transmit the disease from the suspected plants to healthy ones by using vectors. The extent of the apparent infestation was so light that additional specimens could not be obtained. No vectors were recovered in Florida.

Mediterranean Fruit Fly

Steiner traps, baited for Mediterranean, Natal, Queensland, and oriental fruit flies, and the melon fly, were in use in Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, and South Carolina. In addition, a small number of McPhail traps were in use in Florida as a means of surveying for the Mexican and other fruit flies. An intensive program involving approximately 7500 Steiner traps is conducted in Florida. In addition, a substantial reserve of fruit fly traps and lure is on hand for use in case of an outbreak such as was experienced in Florida with the Mediterranean fruit fly and in California with the oriental fruit fly. Traps and lures have been sent on several occasions to foreign countries for small scale trap operation, and developmental work is still being carried on by Dr. Steiner in Hawaii for the purpose of testing lures as required and developing new techniques in the fruit fly trap procedure. All surveys with the Steiner traps throughout the Region and with the McPhail traps in Florida were negative during the year.

SURVEY AND DETECTION REPORT

DISTRICT :

REGION
Southern

REPORTING PERIOD (From-To)
7/1/60 - 6/30/61

Hoja Blanca

二



CONTROL ACCOMPLISHMENT REPORT

REGION

Southern

REPORTING PERIOD (From-To)

Hoja Blanca

7/1/60 - 6/30/61

FUMIGATION

TREATMENT	NUMBER
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
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86	86
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89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

20

03	NO. OF HOST PLANTS
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
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86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

04

INSECTICIDE

ACR

Q

BROWN

ATED

HERBICIDE

ALBANY

64

1994

384

CAL

EATED

BIOLOGICAL
CONTROL

13

ACBBS

Mississippi

2

TOTAL
FROM JULY 1

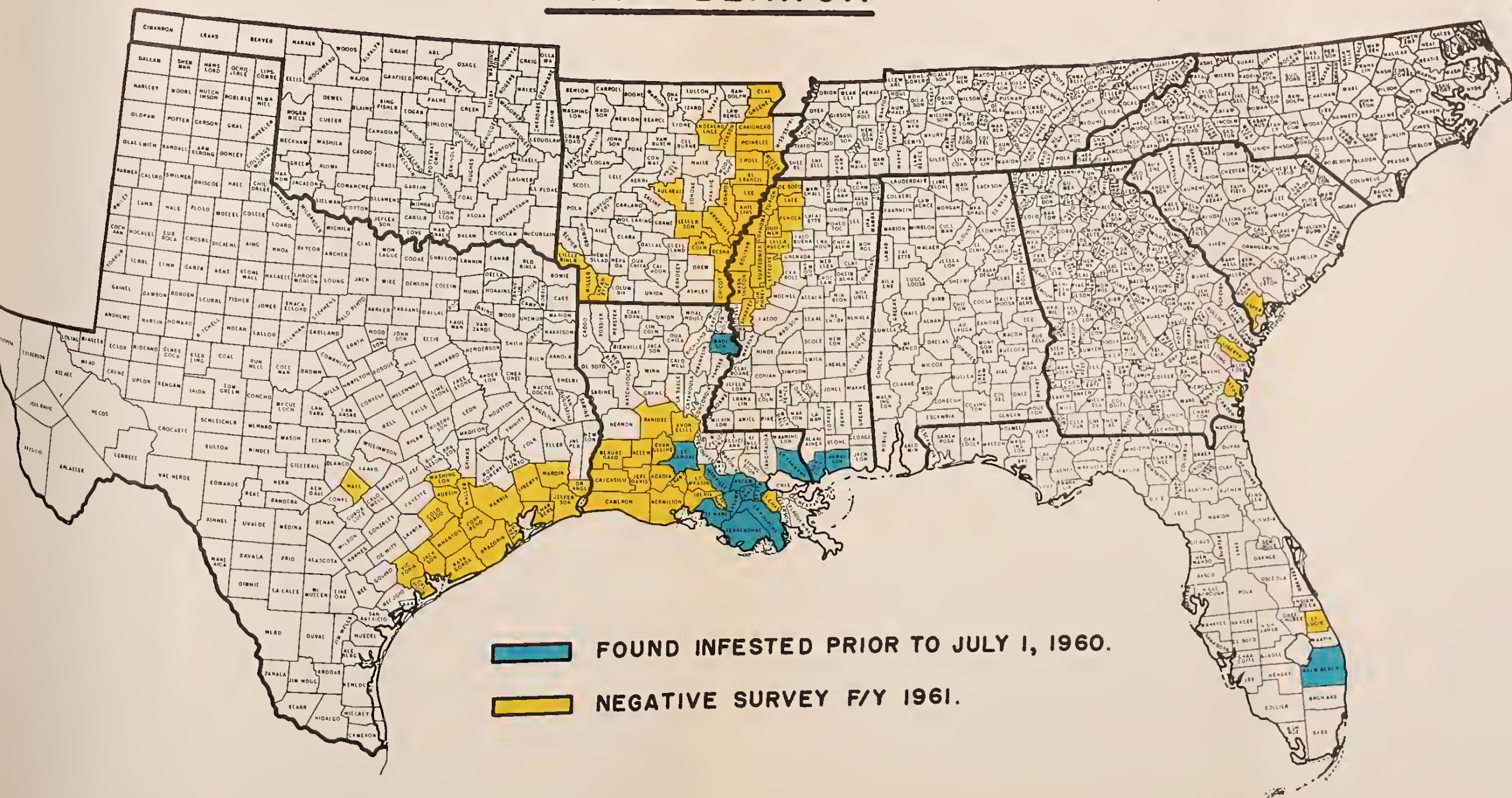
2

185

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION

SOUTHERN REGION

HOJA BLANCA





SURVEY AND DETECTION REPORT

REPORTING PERIOD (From-To)
7/1/60 - 6/30/61

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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SURVEY AND DETECTION REPORT

STATE

Southern

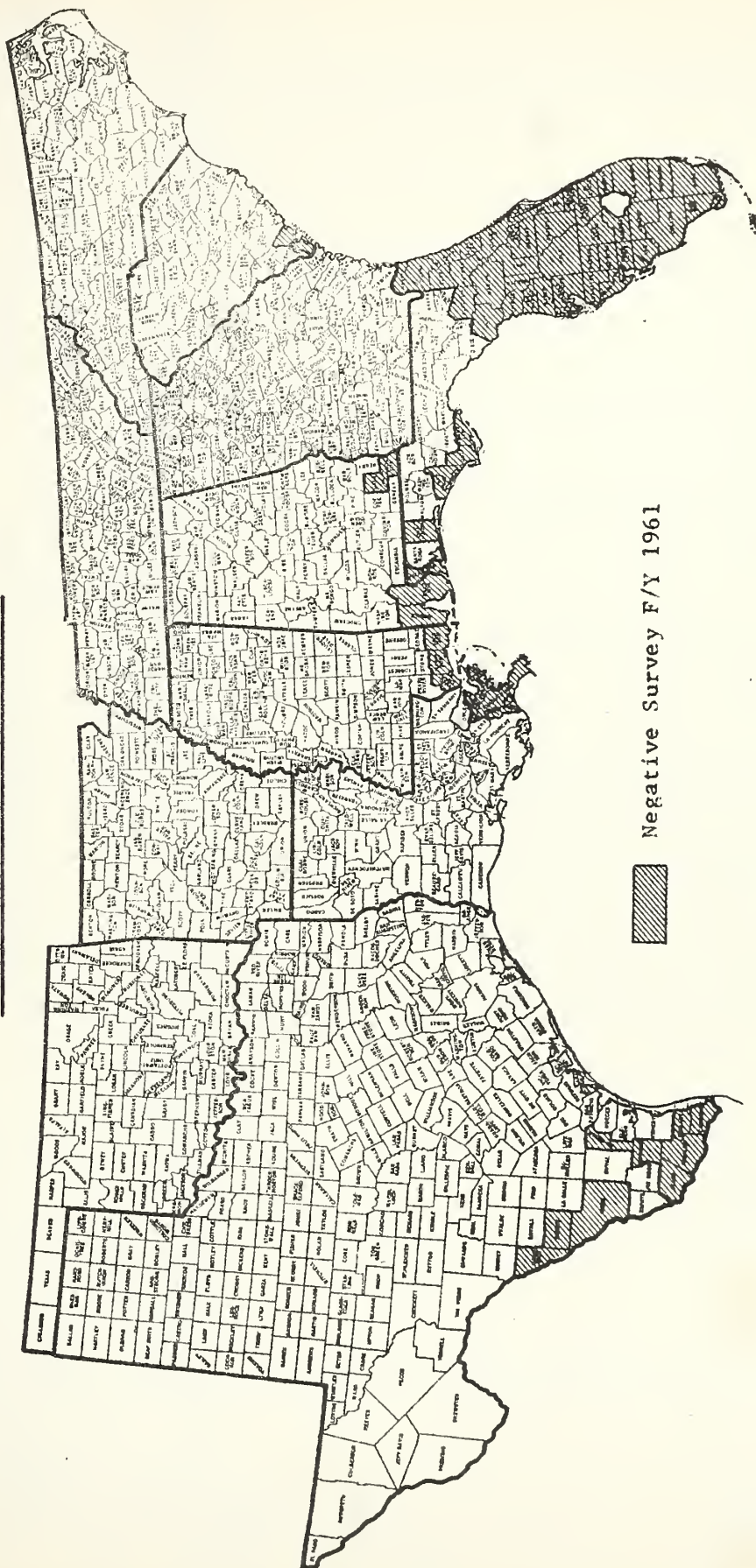
REPORTING PERIOD (From-To)
7/1/60 - 6/30/61

GRAM
Mediterranean Fruit Fly

STATE A	SURVEYED			INFESTED								
	01 NUMBER PROPERTIES SURVEYED B	02 NUMBER SQ. MILES C	03 NUMBER ACRES D	04 NUMBER TRAPS IN USE E	05 NUMBER HOSTS EXAMINED F	06 NUMBER SAMPLES COLLECTED G	07 NUMBER POSITIVE SPECIMENS H	08 NUMBER PROPERTIES I	09 NUMBER CUBIC FEET J	10 NUMBER ACRES K	11 NUMBER HOSTS L	INTEN- SITY M
Alabama				58								
Florida				7839								
Louisiana				117								
Mississippi				35								
South Carolina				32								
Texas	5317			173								

UNITED STATES DEPARTMENT OF AGRICULTURE
 AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
 SOUTHERN REGION

MEDITERRANEAN FRUIT FLY



76



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Cooperative Economic
Insect Survey

SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by:

Region Southern

Fiscal year 1961

Area	Public Meetings Attended	P r e s e n t a t i o n s				Feature & News Stories*	Extent These Aids Were Used			Infest. Maps & Posters	Special Reports
		Talks	Slides	Films	Radio	TV	Exhibits	Bul.	Cir.		
Florida		20	5	1	8		9	96	79	5	1
Georgia	3	3	1				1	7	3		
Oklahoma									100		
Texas	2										
Total	5	23	6	1	8		10	103	182	5	1



GOLDEN NEMATODE

Golden nematode surveys were carried out in the states of Alabama, Florida, Georgia, North Carolina, and Texas in connection with other program activities. This work is primarily a detection survey since no particular section is known to be exposed to infestation, except possibly the Lower Rio Grande Valley of Texas. Some years ago the golden nematode was found in freight car sweepings in Mexico, and there is some evidence that the pest may be established in that country.

Since the potato-growing area in the Lower Rio Grande Valley is considered as exposed because of normal traffic across the border, a more intensive survey is conducted in this area than anywhere else in the Region. Even though this work is largely incidental to other program activities, both grader and field samples are collected and processed. Surveys have been conducted in one part or another of the Southern Region since 1949. Many of these surveys have been sufficiently adequate to reveal the presence of this pest if any extensive infestations are present.

Because of the effective work being carried out in the infested area of the Eastern Region, it is felt that the possibility of the spread of this pest to the Southern Region is negligible and our activities are limited to detection survey except for that area along the Mexican Border where systematic surveys are carried out.

1. The first part of the report is a general
 introduction to the subject of the study.
 2. The second part is a description of the
 methods used in the study.
 3. The third part is a description of the
 results of the study.
 4. The fourth part is a discussion of the
 results of the study.

5. The fifth part is a conclusion of the
 study.
 6. The sixth part is a list of references.
 7. The seventh part is a list of
 abbreviations.
 8. The eighth part is a list of
 symbols.

9. The ninth part is a list of
 figures.
 10. The tenth part is a list of
 tables.

SURVEY AND DETECTION REPORT

REGION

Southern

REPORTING PERIOD (From-To)

[illegible]



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Golden Nematode

SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by: _____

Region Southern

Fiscal year 1961

Area	Public Meetings Attended	P r e s e n t a t i o n s					Feature & News Stories*	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.	Infest. Maps & Posters	
Florida		1										
Total		1										



GRASSHOPPER

The adult grasshopper surveys were conducted in the prescribed manner in the states of Arkansas, Oklahoma, and Texas. The area normally threatened by grasshoppers was covered in each state. No economic infestations were found in Arkansas. However, during the year in most sections of the state, nearly normal moisture conditions and adequate succulent vegetation have concealed existing grasshopper populations and held them down to non-economic numbers. At the close of the year, late instar nymphs and adults at a few widely scattered locations within the state were large enough in number to represent light infestations. Some 80,000 acres were found with substantial populations in western Oklahoma. Predators, parasites, and diseases were found prevalent over the area surveyed in Texas in the fall of 1960. In late April and May of 1961, nymphal observations were conducted throughout the Panhandle District of Texas. Limited observations were made in other Texas Districts. Some voluntary controls were reported over the state, mostly marginal treatments adjacent to cultivated crops. A total of 809,350 acres was reported as supporting threatening populations in 26 Panhandle counties, but by the end of the fiscal year, no control program of any type was contemplated by the Division.

The principal species encountered were: Melanoplus femur-rubrum and M. differentialis in Arkansas; M. occidentalis, Phibostroma quadrimaculatum, Aulocara ellioti, Drepanopterna femoratum, M. bivittatus, M. differentialis, and M. maculipennis in Oklahoma; and M. differentialis, A. ellioti, Dissosteira longipennis, and M. bilituratus in Texas.

A general hatching of eggs began in early May and was completed by mid-June. Nymphal surveys were begun with the above indicated results. At the close of the fiscal year, there was no eminent danger of any serious outbreak, but the possibilities existed in several locations in both Texas and Oklahoma. The only controls planned were by individuals on a local basis to protect row crops and field margins of other cultivated crops.

Combining the results of the 1960 season and the first half of the summer of 1961, it is the opinion of experienced observers that we have a potentially explosive situation for 1962 and that a careful watch will be necessary in the meantime.

SURVEY AND DETECTION REPORT

REGION

Southern

REPORTING PERIOD (From-To)

7/1/60 - 6/30/61

03人ヨハニス

01
NUMBER
SURVEY

STAT.

**NUMBERS
ACRES**

NUMBER
SQ. MILES

04

NUMBER
HOSTS
EXAMINED

30

NUMBER SAMPLES COLLECTED	NUMBER POSITIVE SPECIMENS
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
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17	17
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89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

100

NUMBER
PROPERTIES

QUESTIONS

69

STACY WILSON

11

UNIVERSITY

Oklahoma

55XIII

81000

809350

TOTAL
FROM JULY 1

890350

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Grasshopper Control

SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by: _____

Region Southern

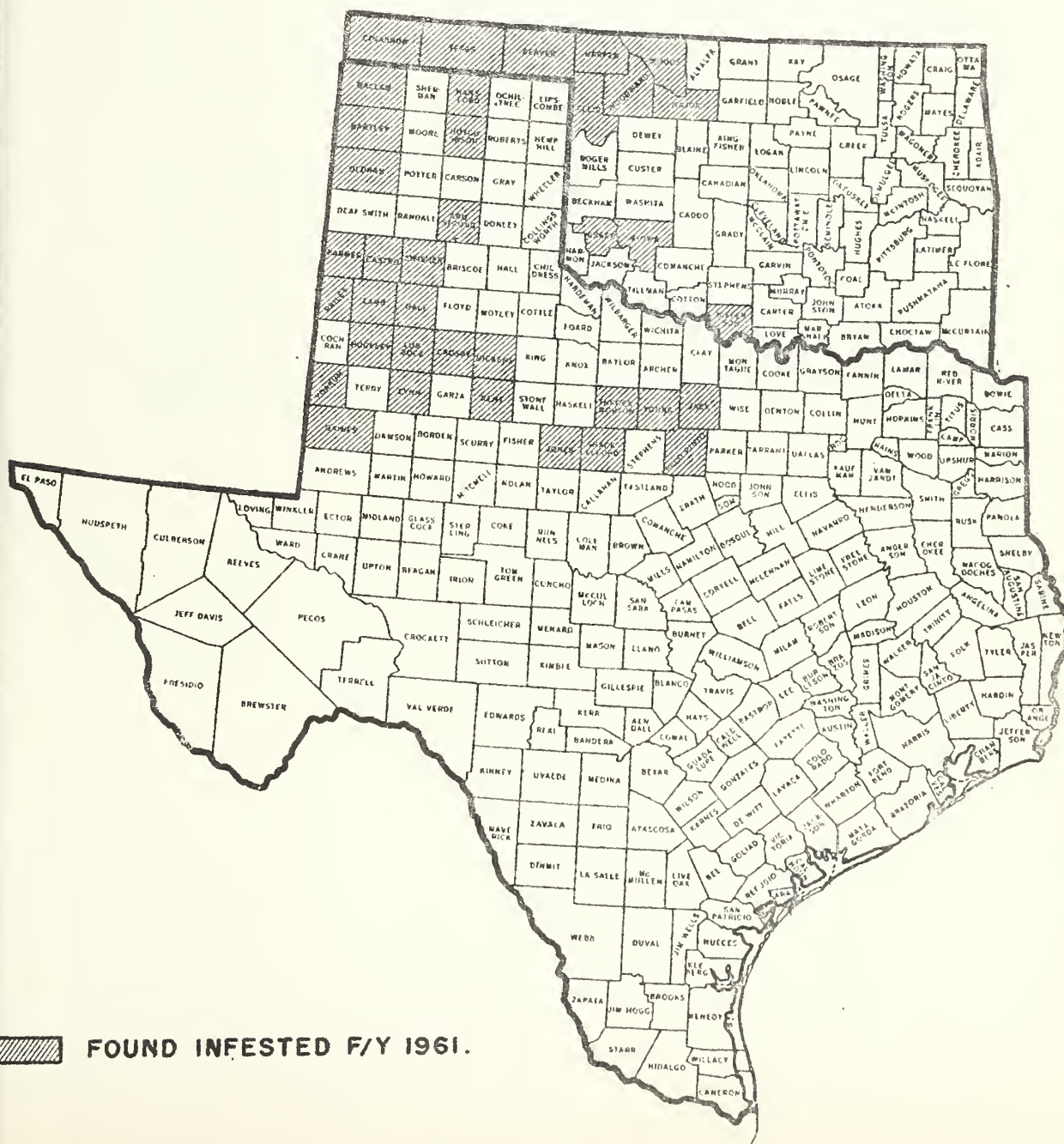
Fiscal year 1961

Area	Public Meetings Attended	P r e s e n t a t i o n s					Feature & News Stories*	Extent These Aids Were Used			Infest. Maps & Posters	Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.		
Oklahoma		3	3							150	150	
Total		3	3							150	150	



UNITED STATES DEPARTMENT OF AGRICULTURE
 AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
 SOUTHERN REGION

GRASSHOPPER



FOUND INFESTED F/Y 1961.



GYPSY MOTH

The availability of a low cost trap and a synthetic lure made possible some exploratory survey for gypsy moth in the Region. Traps were placed in areas in North Carolina where hardwood lumber had been known to be shipped to furniture factories from northeastern states. Traps also were placed in the hardwood sections of the Great Smoky Mountains of North Carolina and Tennessee, where there is a large amount of tourist traffic from all sections of the country. The probability of the presence of infestations was believed so low that no expenditure of time or funds could be made which would result in any substantial reduction of the work on other programs. Therefore, the most important single factor in determining the location of traps was the availability of men who could take care of them in conjunction with their regular duties.

A large number of these traps were handled in conjunction with the Japanese beetle trapping survey in both Tennessee and North Carolina. It is proposed to continue and extend this type of survey throughout the hardwood sections of the Region as time and manpower permit. An important reason for this is to provide an opportunity for our field men to become acquainted with the trap and its operation so that, if an infestation should be found, we will be in a better position to do an intensive delimiting survey without excessive loss of time in training inspectors.

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SURVEY AND DETECTION REPORT

REGION

Southern

REPORTING PERIOD (From-To)
7/1/60 - 6/30/61

TOTAL
FROM JULY 1

IMPORTED FIRE ANT

During the year, imported fire ant infestations were found in the following counties not previously known to be infested: Marion County, Alabama; Pinellas County, Florida; Warren County, Mississippi; Clarendon, Jasper, Lexington, and Richland Counties, South Carolina; and Montgomery and Brazoria Counties, Texas; as well as in De Soto, Grant, and St. James Parishes, Louisiana. Extensions of known infested areas were found in most states, but in many cases they were small isolated infestations which received immediate treatment.

Eradication treatments were continued. Most of the aerial treatments were made in Georgia and Louisiana, with smaller contracts in South Carolina and Texas. The 2-pound-per-acre treatment with heptachlor was discontinued and replaced with two 1/4-pound-per-acre applications. Treatments for regulatory purposes in the environs of nurseries and dissemination points were made with ground equipment. Ground equipment also is utilized for the treatment of small blocks and for the treatment of environs of hazardous locations flagged out during aerial applications. Some progress was made in the treatment of highway shoulders in the infested areas. In states where matching funds were not available, insecticide was provided by county boards or municipalities in some instances. In many areas, a combined treatment was applied for the imported fire ant and the white-fringed beetle.

As of June 30, 1961, all known imported fire ant infestations in North Carolina were treated. The same is true for South Carolina, except for a small area in one county. A similar program is under way in Arkansas and Central Texas.

Every effort is being made to prevent further spread of the insect through enforcement of the State and Federal Quarantines. The Methods Improvement Laboratory personnel have devoted much effort to developing a more effective eradication treatment. We feel confident that in the near future a more effective, economical, and practical eradication treatment will be developed.

The first part of the report deals with the general situation of the country. It is a very interesting and informative study of the country's development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country's development.

The second part of the report deals with the economic situation of the country. It is a very interesting and informative study of the country's economic development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country's economic development.

The third part of the report deals with the social situation of the country. It is a very interesting and informative study of the country's social development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country's social development.

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION REPORT

U. S. DEPARTMENT OF AGRICULTURE AGRICULTURAL RESEARCH SERVICE PLANT PEST CONTROL DIVISION				STATE	DISTRICT	REGION	REPORTING PERIOD (From-To)						
SURVEY AND DETECTION REPORT				Imported Fire Ant							7/1/60 - 6/30/61		
STATE A	SURVEYED			04 NUMBER TRAPS IN USE E	05 NUMBER HOSTS EXAMINED F	06 NUMBER SAMPLES COLLECTED G	07 NUMBER POSITIVE SPECIMENS H	08 NUMBER PROPERTIES I	INFESTED				
	01 NUMBER PROPERTIES SURVEYED B	02 NUMBER SQ. MILES C	03 NUMBER ACRES D						09 NUMBER CUBIC FEET J	10 NUMBER ACRES K	11 NUMBER HOSTS L	12 INTEN- SITY M	
Alabama	2396							167			3690		
Arkansas	2175							47			3582		
Florida	3605							69			890		
Georgia	24727							5787			958989		
Louisiana	13854							3252			201759		
Mississippi	9096							541			51600		
North Carolina	17472							90			525		
Oklahoma	148												
South Carolina	14115							501			9904		
Tennessee	9411												
Texas	10206										87770		
TOTAL FROM JULY 1	107,205							10,454			1,318,709		



REGULATORY ACTIVITY REPORT

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL RESEARCH SERVICE PLANT PEST CONTROL DIVISION										STATE		DISTRICT		REGION			
REGULATORY ACTIVITY REPORT										Imported Fire Ant						REPORTING PERIOD (From-To) 7/1/60 - 6/30/61	
INSPECTION FOR CERTIFICATION										ACRES TREATED FOR CERTIFICATION PURPOSES				COMMODITY TREATMENT QUANTITY (plants, tons, bales, etc.)			
09 STATE A	ACRES		03 PROCESSING PLANTS E	04 SHIPPING POINTS F	05 INDUSTRY SITES G	06 OTHER H	07 SOIL I		08 FOLIAGE J	* 11. 19 FUMIGATED L	* 21. 29 DIPPED M	* 31. 39 SOAKED N	* 41. 49 HEATED O	* 51. 59 OTHER P			
	01 NURSERY C	02 OTHER D															
Alabama	10870	31071	107	323	92	7493	4282			2709	5075		15173	4284			
Arkansas							1										
Florida	1886	1434	5340	252	254	824	457			27				8			
Georgia	37	908	5	7	3	2	398			9209	3827	37	3522	11267			
Louisiana	724	6092		5	14		2557			1	16						
Mississippi	577	2848	108	86	207	102	674			152	9	14		7725			
North Carolina	49	33		22													
South Carolina	8	11	4		4	12	9										
Texas		2273	1	1		7	629							1872			
TOTAL FROM JULY 1	3281	24,469	36,529	389	986	574	8,440	9,007		12,098	8,927	51	18,695	25,156			

* Segment of operation.

IMPORTED FIRE ANT

Status of Treatment

IMPORTED FIRE ANT Status of Treatment				REGION Southern		PREPARED BY					
				PERIOD (Designate: Month, 1-15, 16-31, or 1-31)		DATE PREPARED					
				Fiscal Year 1961							
STATE COUNTY LOCALITY	A	ESTIMATE ACRES OF INFESTATION	B	COOPERATIVE ERADICATION PROGRAM		BY FARMERS EXCLUSIVE OF COOP PROGRAM	E	TOTAL ACRES TREATED*	F	ESTIMATE OF ACRES REMAINING TO BE TREATED	G
				BY AIRCRAFT	C						
Alabama				8,341 (37,444)*		11,726 (89)*	0	20,067 (37,533)*		10,826,965	
Arkansas				1,416		16	0	1,432		100,400	
Florida				11,000 (227,113)*		1,301 (252)*	0	12,301 (227,365)*		1,437,125	
Georgia				104,830 (166,007)*		12,604 (595)*	0	117,434 (166,602)*		1,935,224	
Louisiana				174,389		22,507	5,110	202,006		5,368,359	
Mississippi				1,832		(5,287)* 46,943	(52)* 2,459	(5,339)* 51,234		4,384,417	
North Carolina				0		4,695	0	4,695		0	
South Carolina				3,696 (14,630)*		9,055 (7,195)*	60	12,811 (21,825)*		15,000	
Texas				14,774		17,550	0	32,324		1,218,576	
(Total)*				(445,194)*		(13,418)*	(52)*	(458,664)*			
TOTAL THIS PERIOD											
TOTAL FROM JULY 1				320,278		126,397	7,629	454,304		25,286,066	
TOTAL FROM BEGINNING OF PROGRAM				1,794,858		752,112	181,389	2,728,359		XXX	

*COLUMNS C, D, AND E, INCLUSIVE.

PPC 7-22
(JULY 58)

* Received first application only of two-
application treatment.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Imported Fire Ant

SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by: _____

Region Southern

Fiscal year 1961

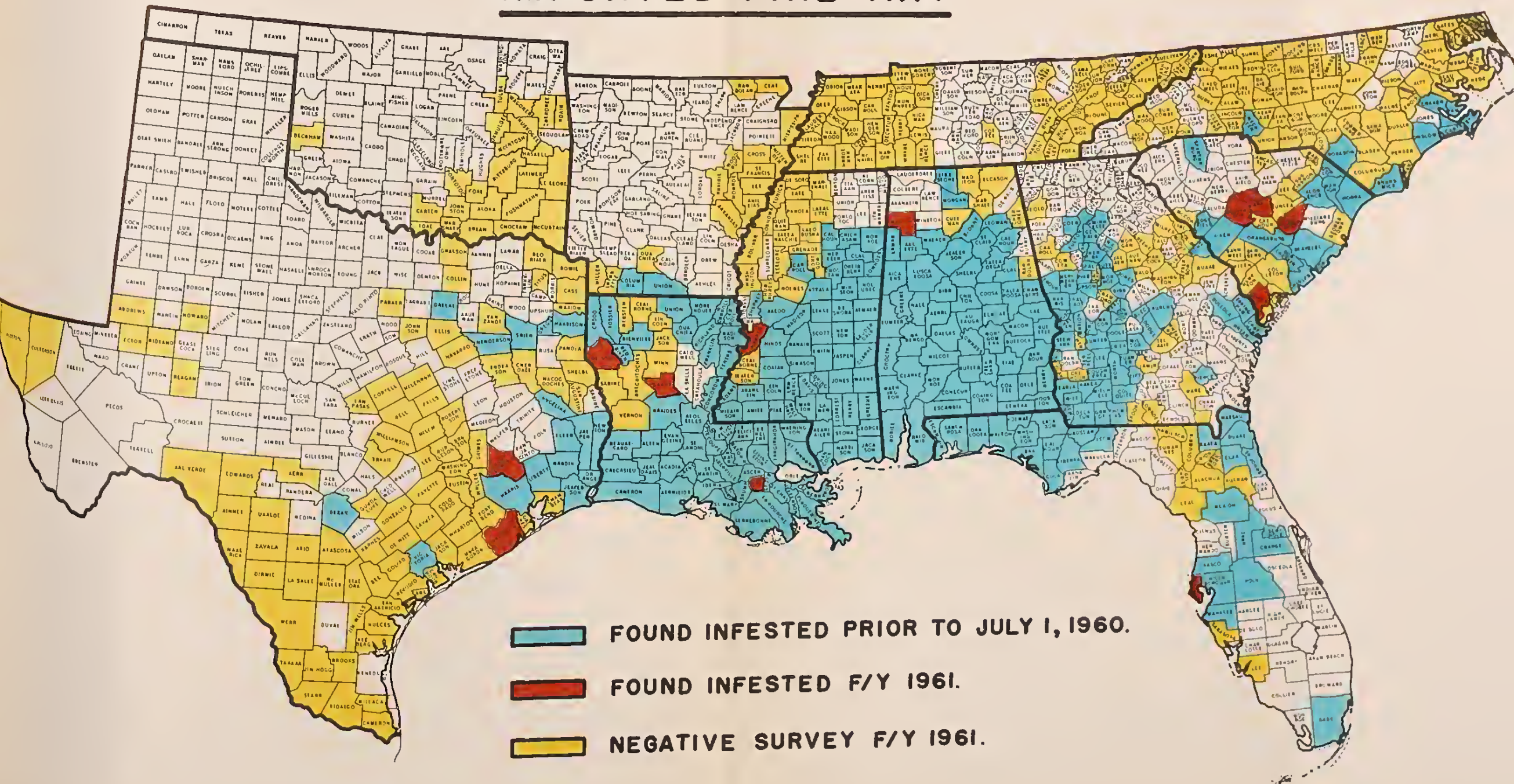
Area	Public Meetings Attended	P r e s e n t a t i o n s					Feature & News Stories*	Extent These Aids Were Used			Special Reports	
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.		Infest. Maps & Posters
Alabama	33	30	9	4	13		18	1	175	500	1	4
Arkansas	3	3					5					
Florida	8	7	7	1	2		26	2	95	187	33	1
Georgia	84	138	44	131	50	4	117	8	501	6340	84	1
Mississippi	25	2					34		300	200		
North Carolina		110	101				1			35	8	
South Carolina	49	164	161	1	23	3	15		50	340	173	
Texas	13	11	10				2	2	42		2	
Total	215	465	332	137	88	7	218	13	1163	7602	301	6

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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

IMPORTED FIRE ANT





JAPANESE BEETLE

A Japanese Beetle Survey was conducted in each state within the Southern Region. Over 4,500 traps were used, and visual surveys were made on approximately one-half million acres. During the fiscal year ending June 30, 1961, infestations were found for the first time in six counties. Most of the traps in the Region were confined to the peripheral areas of infestation; namely, in eastern Tennessee, northern Georgia, and South Carolina. Some traps were used in North Carolina in counties where infestations are not known to be present or where information is necessary regarding the emergence, buildup, and decline of the beetles. Surveys in western Tennessee, southern Georgia, and the remainder of the Region, were confined largely to airports, truck terminals, and other areas regarded as particularly vulnerable to invasion by the beetles. The spread and population buildup were, for the most part, about normal. Heavy populations were noted in a few places in the vicinity of Dahlgonega, Georgia. The most significant spread was at Loudon, Tennessee. Important catches were made in Ware (Waycross), Macon, and Bibb Counties, Georgia. Catches at Waycross were in the vicinity of previous captures and adjacent to extensively treated areas. It is questionable whether these represent a light infestation or repeated hitchhikers coming in on freight cars. A few beetles, obviously hitchhikers, were found in Mobile and Jefferson Counties, Alabama, and Shelby and Coffee Counties, Tennessee. In some cases, the survey activities were severely curtailed because of the large number of men required for the inspection of airplanes.

An attempt was made in Tennessee to treat all known infested areas, and this was accomplished before the end of the fiscal year, with the exception of one small area at Lenoir City. Foliar treatments were applied extensively in the bean-growing sections of western North Carolina and at other hazardous places. Efforts were made to treat as many air fields as possible within the Region, regardless of their infestation status.

Large-scale experiments were conducted in the use of spore dust as a means of introducing milky disease in the vicinities of Dahlgonega, Georgia, and Wilmington, North Carolina. There is some indication that this disease will be effective under the conditions encountered at these two locations and probably will be useful throughout most of the Region.

During the spring of 1961, it was decided to intensify the summer survey to the maximum extent possible, preparatory to a complete review of the entire program. Another important development was the decision to limit airplane inspections to the termination point of numbered flights originating during the daylight hours at hazardous airports. This greatly reduced the manpower needed for that work without seriously reducing the effectiveness of the inspection.

SURVEY AND DETECTION REPORT

U. S. DEPARTMENT OF AGRICULTURE AGRICULTURAL RESEARCH SERVICE PLANT PEST CONTROL DIVISION				STATE		DISTRICT		REGION				
SURVEY AND DETECTION REPORT				PROGRAM		Japanese Beetle		REPORTING PERIOD (From-To)				
				7/1/60 - 6/30/61								
STATE	SURVEYED			INFESTED								
	01 NUMBER PROPERTIES SURVEYED	02 NUMBER SQ. MILES	03 NUMBER ACRES	04 NUMBER TRAPS IN USE	05 NUMBER HOSTS EXAMINED	06 NUMBER SAMPLES COLLECTED	07 NUMBER POSITIVE SPECIMENS	08 NUMBER PROPERTIES	09 NUMBER CUBIC FEET	10 NUMBER ACRES	11 NUMBER HOSTS	12 INTER- CITY
Alabama			57994	391			1					
Arkansas				126								
Florida		3		477								
Georgia			25490	878			1319			10511		
Louisiana			31040	58								
Mississippi			494	73								
North Carolina			4338	461								
Oklahoma		18		67								
South Carolina			41133	673			795			4070		
Tennessee			265333	1230			120			2762		
Texas				82								

REGULATORY ACTIVITY REPORT

COLONY

Southern

(01. 08. 2017) 09:14:36

Japanese Beetle

7/1/60 - 6/30/61

* Segment of operation.



CONTROL ACCOMPLISHMENT REPORT

NOTES

Southern

REPORTING PERIOD (From-To)

Japanese Beetle

7/1/60 - 6/30/61

EMIGRATION

EDICIÓN

2017.05.11

MECHANICAL

2017 25 11

MECHANICAL

BIOLOGICAL
CONCEPTS

山手山

2

Georgia

North

Carolina

Tennessee

TOTAL
FROM JULY 1

10482

39

39

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Japanese Beetle

SUMMARY OF ASSOCIATED ACTIVITIES

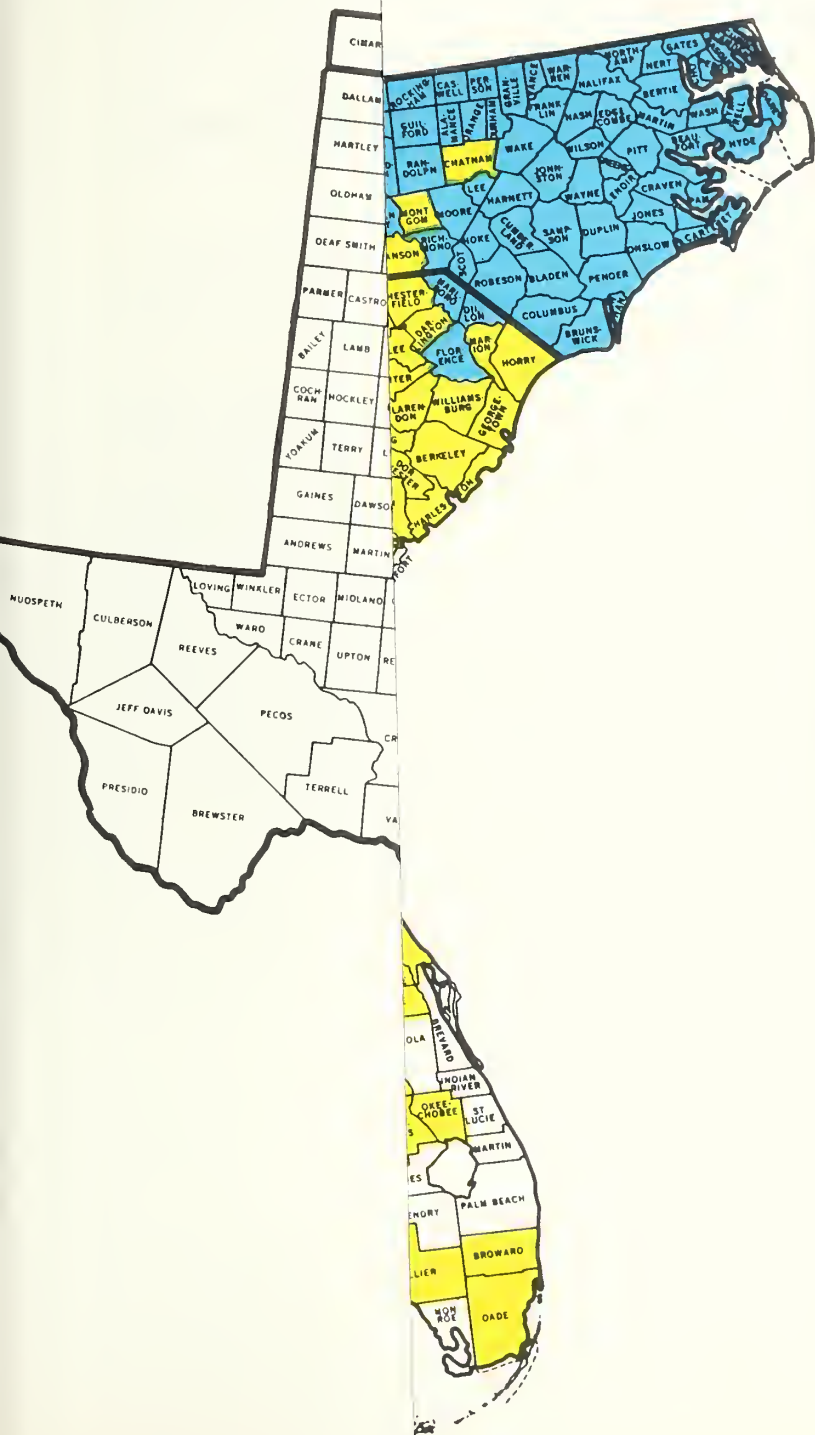
Prepared by: _____

Region Southern

Fiscal year 1961

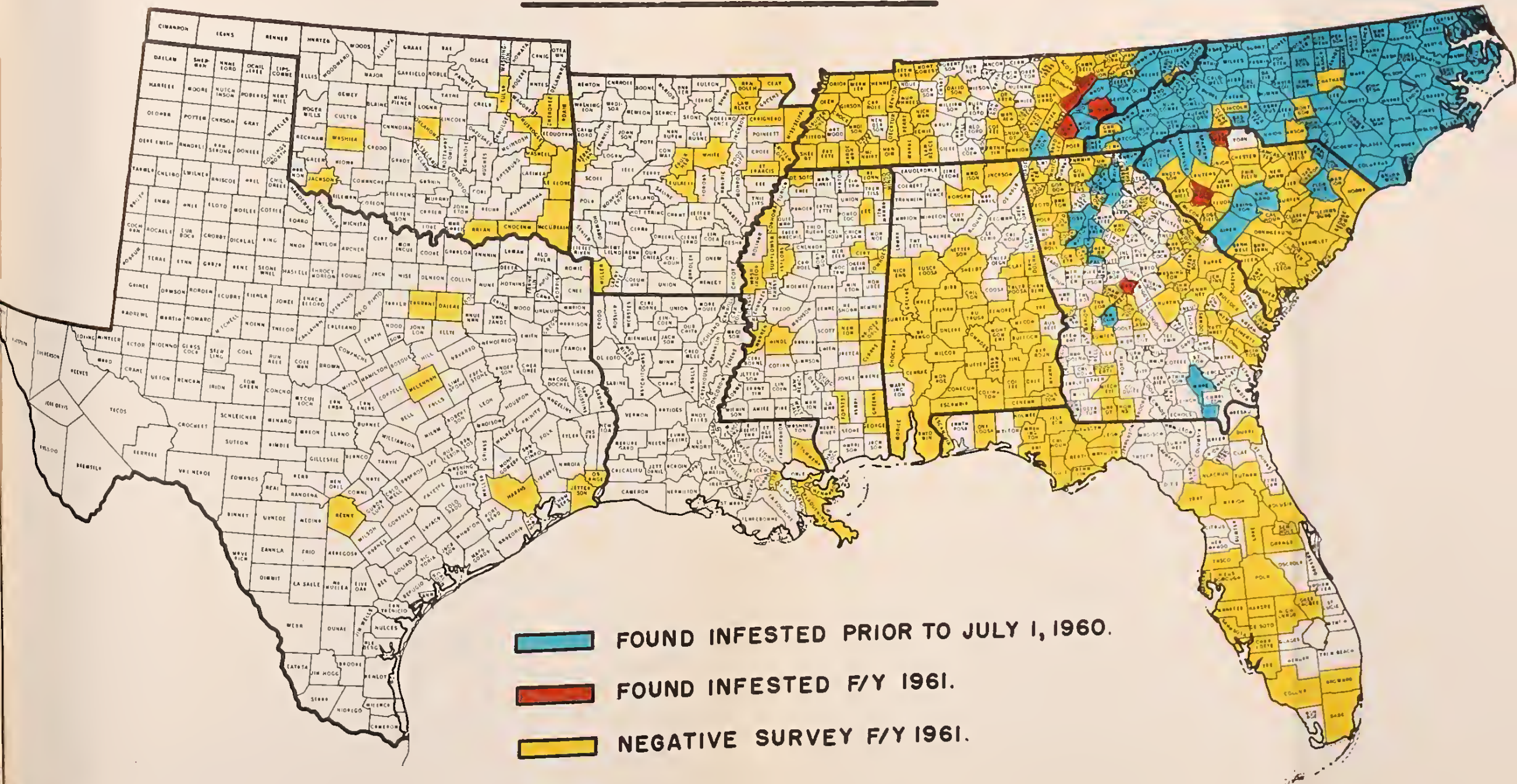
Area	Public Meetings Attended	P r e s e n t a t i o n s					Feature & News Stories*	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Car.	Infest. Maps & Posters	
Alabama		1		1								
Florida	1	2					2	1	19	43	11	
Georgia	1	1		2			1	1	180		6	1
North Carolina	192	311										
South Carolina	26	156	157		13	1	6		20	150	184	
Total	220	471	157	3	13	1	9	2	219	193	201	1

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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION
JAPANESE BEETLE





KHAPRA BEETLE

The Khapra Beetle Survey was conducted in every state in the Region. With the exception of western Texas, this was entirely a detection survey, performed incidental to other duties. Extensive use was made of a list of grain storage establishments which was provided by the Washington office. Particular attention was given to feed and seed stores, breweries, horse racing tracks, firms handling used burlap, and other establishments considered hazardous by the local inspectors. Also, a routine examination was made of grain elevators.. In several instances, state personnel performed a large amount of this survey and showed considerable interest in it.

It is believed that many operators of inspected establishments have been made conscious of the risk involved. This has resulted in clean-up operations and other precautionary measures which are of inestimable value in preventing introduction and establishment of this pest.

The survey in Texas was more intense than that conducted in other states of the Region and included the inspection of 2,438 properties located in 189 counties; all collections were negative. The most intensive survey was begun on February 1 and extended through February 25, in the El Paso section. During these four weeks, from 17 to 19 men were assigned to this work; eight of whom were employees of the Texas Department of Agriculture. During most of the period, the weather was very favorable, which helped in completing the survey of some 929 properties in record time. Final inspection was made of Category 2 properties as follows: September 1960, Heid Brothers, El Paso; January 1961, Union Stockyards; May 1961, Beaver Egg Farm. All properties were released, and there were no known infestations in the Southern Region at the close of the fiscal year.



REGULATORY ACTIVITY REPORT

STATE		ACRES		INSPECTION FOR CERTIFICATION			ACRES TREATED FOR CERTIFICATION PURPOSES		COMMODITY TREATMENT		REPORTING PERIOD (From-To)		REGION			
A		01 NURSERY	02 OTHER	03 PROCESSING PLANTS	04 SHIPPING POINTS	05 INDUSTRY SITES	06 OTHER	07 SOIL	08 FOLIAGE	09 FUMIGATED	10 DIPPED	11 SOAKED	12 HEATED	13 OTHER		
B		C			D			E			F			G		
Texas					1	6										
TOTAL FROM JULY 1					1	6										

* Segment of operation



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Khapra Beetle

SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by: _____

Region Southern

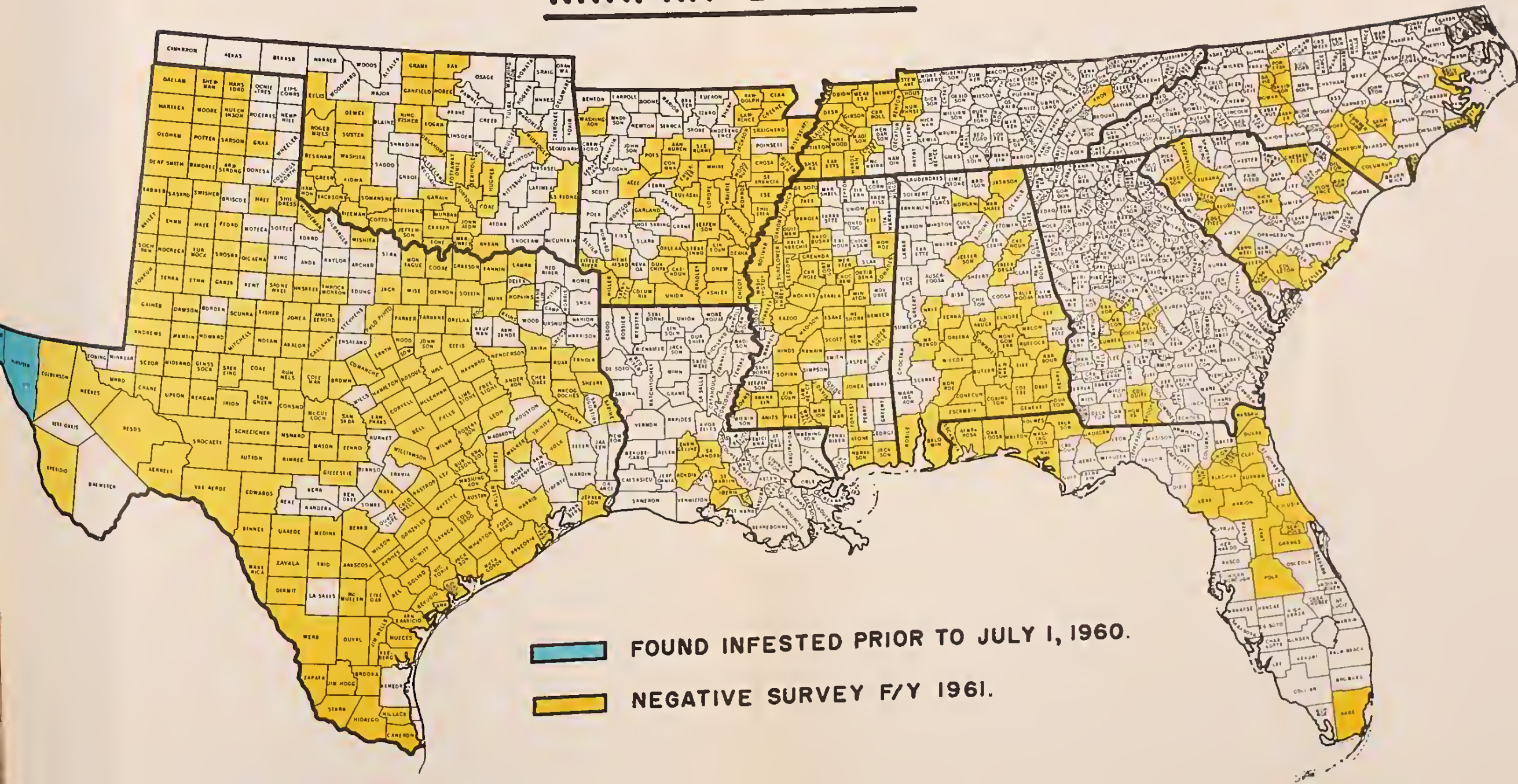
Fiscal year 1961

Area	Public Meetings Attended	P r e s e n t a t i o n s				Feature & News Stories*	Extent These Aids Were Used			Special Reports
		Talks	Slides	Films	Radio TV		Exhibits	Bul.	Cir.	
Florida		4	2			31	7	32	61	
Georgia			2				1	3		
Texas								20		
Total		4	4			31	8	55	61	





UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION
KHAPRA BEETLE





The Mexican fruit fly, a native of northeastern Mexico, attacks citrus and a variety of other fruits. The fly does not survive the summer in southern Texas, but migrates each year from Mexico to the Lower Rio Grande Valley of Texas, where it infests the citrus crop. In order to prevent the spread of the pest to other fruit-growing areas, it is necessary to carry out effective survey and regulatory programs.

During the 1961 season, the maximum number of traps in operation in any one period was 2,340. Surveys were made in 8 regulated counties and 4 counties outside the regulated area.

During the season, Mexican fruit flies were trapped in the following counties of Texas: Brooks, Cameron, Hidalgo, Jim Wells, Starr, Webb, Willacy, and Zavala. Other counties trapped were negative. Of the total flies caught, approximately 56 percent of the females were gravid.

Fruit fumigated with Ethylene Dibromide and moved from the Valley amounted to a little over 1,400,000 boxes (70 pound equivalent). Nine new fumigation chambers were constructed this year.

The Texas Department of Agriculture operated road stations throughout the season enforcing the Mexican Fruit Fly State and Federal Quarantine 100 percent.

SURVEY AND DETECTION REPORT

STATE	DISTRICT	REGION	REPORTING PERIOD (From-To)		PROGRAM	INVESTED										INTEN- SITY		
			7/1/60 - 6/30/61			01 NUMBER PROPERTIES SURVEYED	02 NUMBER SQ. MILES	03 NUMBER ACRES	04 NUMBER TRAPS IN USE	05 NUMBER HOSTS EXAMINED	06 NUMBER SAMPLES COLLECTED	07 NUMBER POSITIVE SPECIMENS	08 NUMBER PROPERTIES	09 NUMBER CUBIC FEET	10 NUMBER ACRES		11 NUMBER HOSTS	
Florida		Southern			Mexican Fruit Fly				448									
Texas			3,248			40				249	62			38,925				
TOTAL FROM JULY 1			3,248			488				249	62			38,925				

REGULATORY ACTIVITY REPORT

STATE

DISTRICT

REGION

Southern

PROGRAM

Mexican Fruit Fly

REPORTING PERIOD (For July)

7/1/60 - 6/30/61

INSPECTION FOR CERTIFICATION

09 NUMBER OF ENTERIES	01 PROCESSING PLANTS	02 SHIPPING POINTS	03 INDUSTRY SITES	04 OTHER
C1 NURSERY	C2 OTHER	C3 OTHER	C4 OTHER	C5 OTHER

CLASS OF
COMMODITY

K

L

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AF

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UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Mexican Fruit Fly
Region Southern

SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by: _____
Fiscal year 1961

Area	Public Meetings Attended	P r e s e n t a t i o n s				Feature & News Stories*	Extent These Aids Were Used			Special Reports
		Talks	Slides	Films	Radio	TV	Exhibits	Bul.	Cir.	
Texas	2		1		7	2			400	
Total	2		1		7	2			400	





PEACH MOSAIC DISEASE

The peach mosaic disease is known to occur within the Southern Region only in southwestern Arkansas, the southern part of Oklahoma, and in the east and central portions of Texas. The peach mosaic virus disease was first observed in the United States in 1931, and since that time it has been determined that the disease is spread by a small mite. Through past years, the disease has caused extensive losses to the peach industry.

The program is carried out by Federal and State inspectors who visually inspect nurseries, budwood sources, commercial orchards, and dooryard plantings for the presence of the disease. When the disease is found, the property owner is requested to remove the diseased trees, thereby preventing further spread of the virus.

During the fiscal year, approximately 1,350,000 trees were examined in the states of Arkansas, Oklahoma, and Texas. Only 33 diseased trees were found during the survey; three in Oklahoma and thirty in Texas. No diseased trees were found in the state of Arkansas. All diseased trees were destroyed by the growers. The incidence of the disease is being kept at a very low point.

1. The first part of the report deals with the general situation of the country and the position of the various groups of the population. It is a very interesting and informative study of the social and economic conditions of the country and the position of the various groups of the population. It is a very interesting and informative study of the social and economic conditions of the country and the position of the various groups of the population.

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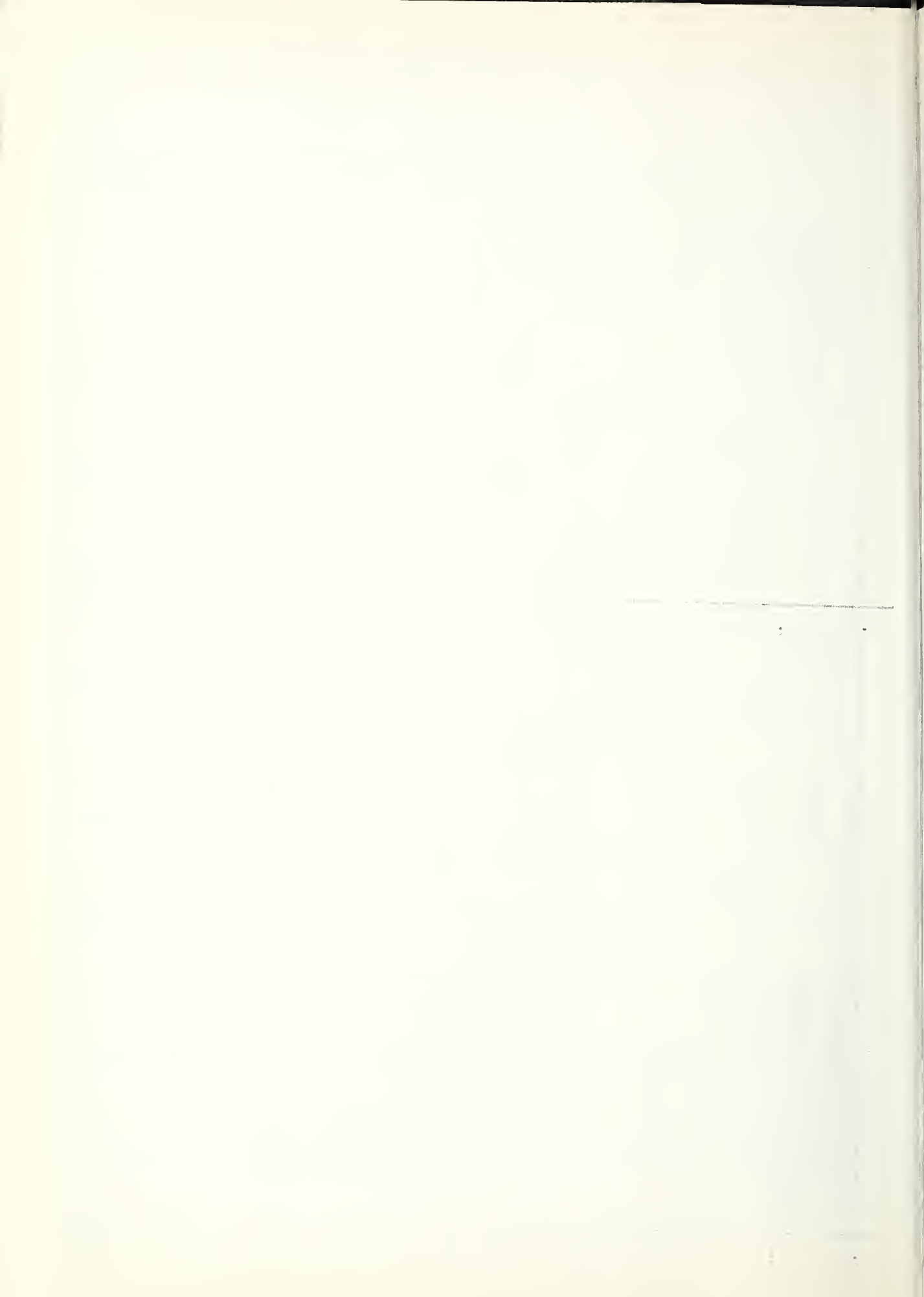
190634 COLLECTED AND REPORT

REGION

Southern

REPORTING PERIOD (From-To)
7/1/60 - 6/30/61

STATE	SURVEYED			INFESTED								INTERMEDIATE CITY
	01 NUMBER PROPERTIES SURVEYED	02 NUMBER SQ. MILES	03 NUMBER ACRES	04 NUMBER TRAPS IN USE	05 NUMBER HOSTS EXAMINED	06 NUMBER SAMPLES COLLECTED	07 NUMBER POSITIVE SPECIMENS	08 NUMBER PROPERTIES	09 NUMBER CUBIC FEET	10 NUMBER ACRES	11 NUMBER HOSTS	
Arkansas	97				596,109							
Oklahoma	55				490,826							
Texas	389				265,549			17			30	



REGULATORY ACTIVITY REPORT

DISTRICT

REGION

Southern

REPORTING PERIOD (From To)

7/1/60 - 6/30/61

Peach Mosaic

* Segment of operation.



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Peach Mosaic

SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by: _____

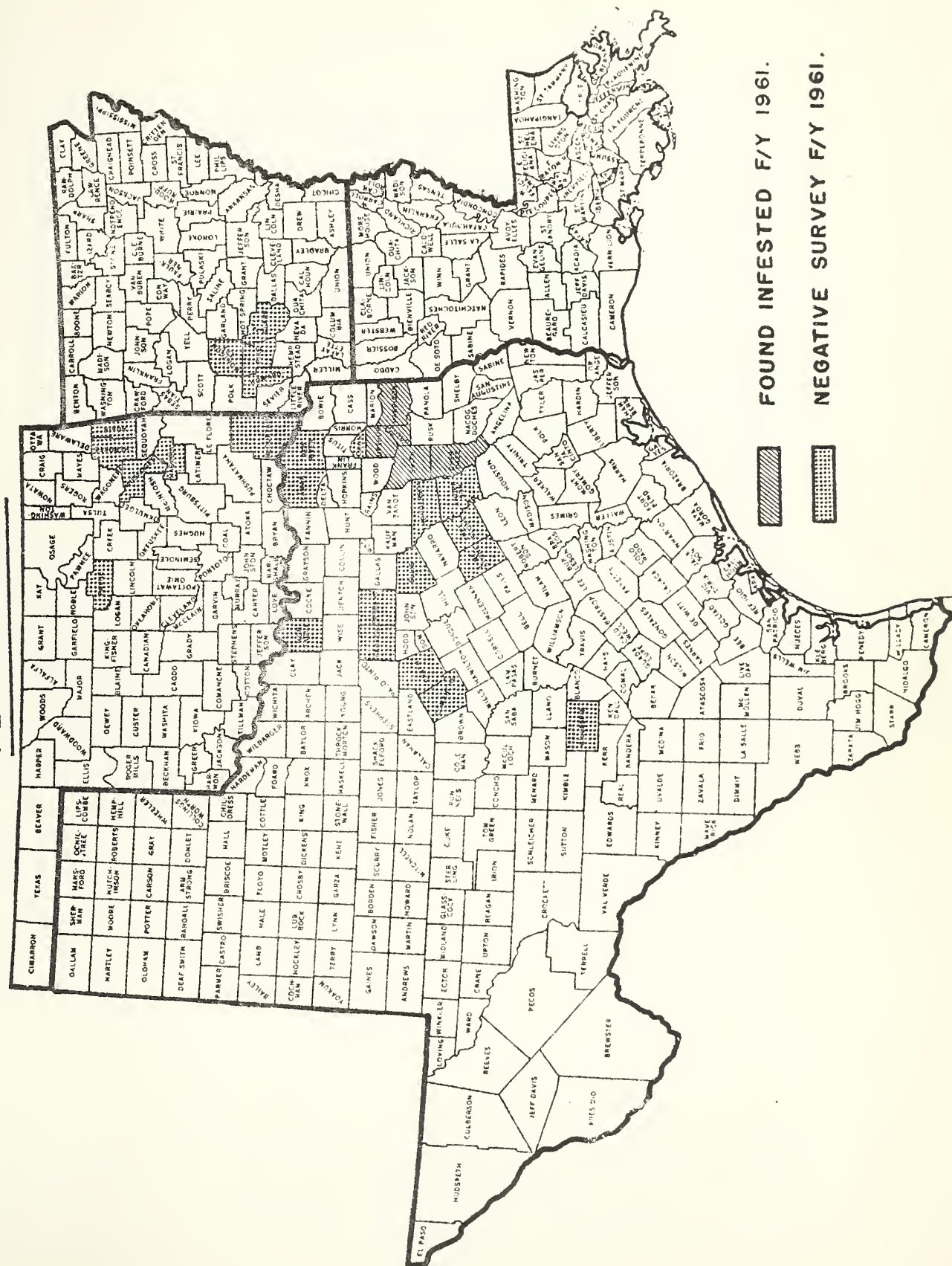
Region Southern

Fiscal year 1961

Area	Public Meetings Attended	P r e s e n t a t i o n s					Feature & News Stories*	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.	Infest. Maps & Posters	
Texas	1											
Total	1											

AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

PEACH MOSAIC



[illegible]

2

PHONY PEACH

Phony peach, a destructive virus disease of peaches, was first observed in the state of Georgia about 1890. The disease does not cause early death of the trees but retards the growth of new twigs and reduces the yield and size of the fruit.

Generally, within two years after the disease symptoms are visible, marketable fruit loss is nearly 100 percent. The disease occurs in all of our commercial peach-producing states in the Southern Region and is transmitted from diseased to healthy plants by leafhoppers. Both peaches and wild plums are hosts, and in the southeastern part of the United States most of the wild plums are infected.

Program activities include a visual inspection of peach trees in commercial orchards and nurseries, and removal of diseased trees by the growers. In some states a cooperative wild plum eradication program is carried out in the environs of orchards. This procedure has proved effective in keeping the disease incidence at a very low level.

Surveys of commercial peach-producing areas were made this year in the states of Alabama, Arkansas, Georgia, Louisiana, Mississippi, South Carolina, and Texas. Of approximately 7,120,000 trees inspected, only 29,424 diseased peach trees were found. In those areas where wild plum eradication programs are being carried out, the growers and the peach industry are cooperating with the State Regulatory Agencies and the Division by furnishing labor and chemicals for the application of herbicides.

SURVEY AND DETECTION REPORT

Southern

REPORTING PERIOD (From-To)
7/1/60 - 6/30/61

5

REGULATORY ACTIVITY REPORT

DISNEY

Southern

Southern

REPORTING PERIOD (From-To)

Phony Peach

[illegible]

* Segment of operation.



U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

CONTROL ACCOMPLISHMENT REPORT

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1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

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UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Phony Peach

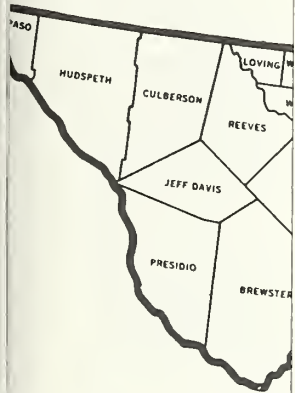
SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by: _____

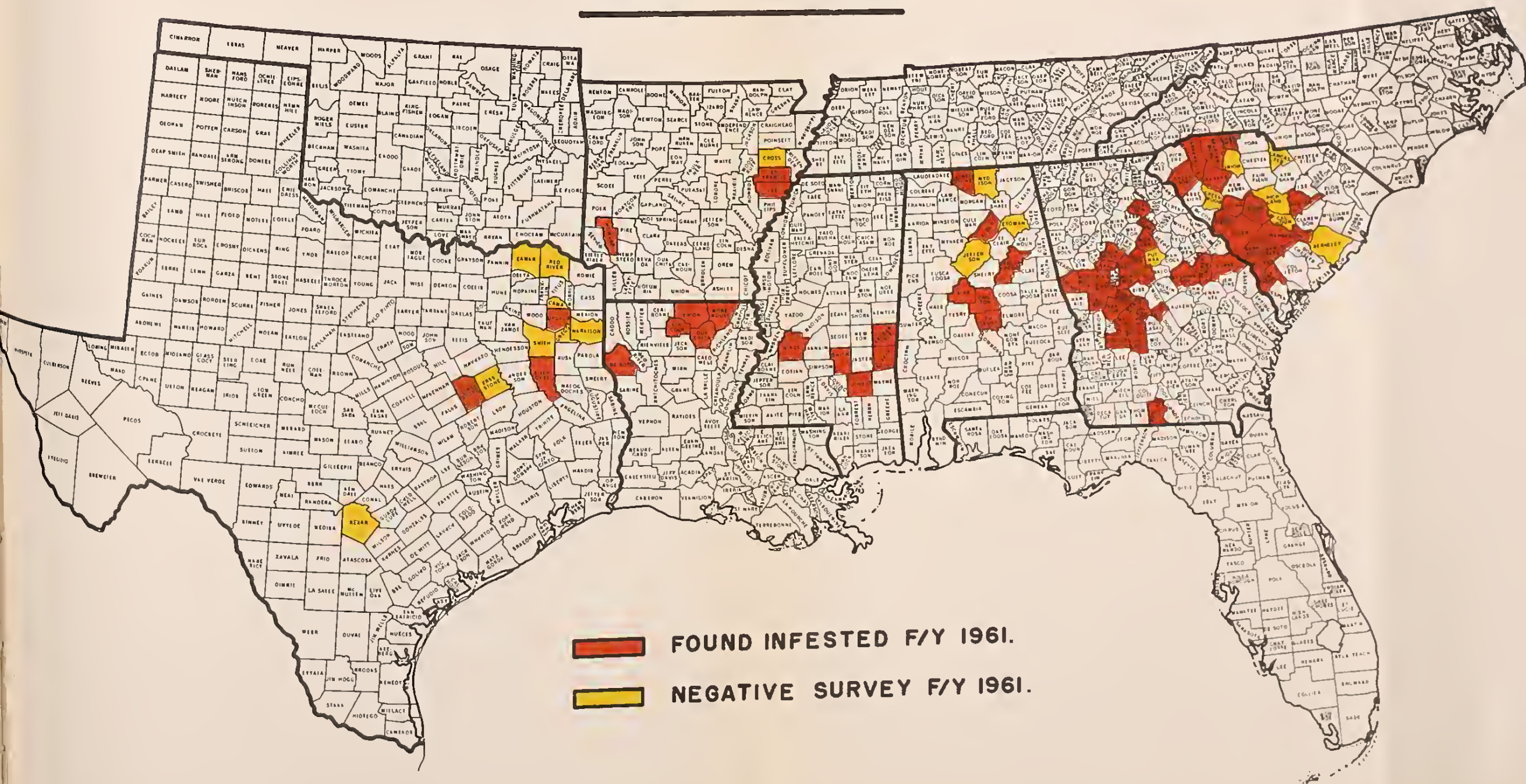
Region Southern

Fiscal year 1961

| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | Feature & News Stories* | Extent These Aids Were Used | | | Infest. Maps & Posters | Special Reports |
|----------------|--------------------------|---------------------------|--------|-------|-------|-------------------------|-----------------------------|------|------|------------------------|-----------------|
| | | Talks | Slides | Films | Radio | TV | Exhibits | Bul. | Cir. | | |
| Alabama | 6 | 1 | | | | | | | | | |
| Georgia | 2 | | | | | | | | | | |
| South Carolina | 12 | 157 | 139 | | 13 | 3 | | | | 97 | |
| Texas | 1 | | | | | | | | | | |
| Total | 21 | 158 | 139 | | 13 | 3 | | | | 97 | |



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION
PHONY PEACH





PINK BOLLWORM

Since the pink bollworm's entry into the United States in 1917, it has spread over the principal cotton-growing areas in Texas, Oklahoma, and New Mexico, and has been found in parts of the cotton-growing areas of Arizona, Arkansas, and Louisiana. Program activities of the Division and cooperating cotton-producing states consist of prevention of spread by enforcing quarantine regulations on movement of infested products, eradicating outlying infestations, reducing populations in the generally infested area with control operations, and detecting new infestations and population density through surveys.

The pink bollworm population in the infested area of the Southern Region was the lowest it has been for a number of years. Two pink bollworms were found in St. Francis County, Arkansas; this is the first time this county has been infested. Four pink bollworms were recovered from two regulated counties in Arkansas; namely, 3 in Crawford and 1 in White. In Louisiana, 2 pink bollworms were recovered in De Soto Parish and 1 in Sabine Parish. Infestations in Oklahoma were general but were much lighter than during the previous year. Of 226 counties surveyed in Texas, only the following were classified as being heavily infested: Cameron, El Paso, Bastrop, Lee, Travis, Williamson, and Bell.

Pink bollworm surveys were made in 10 states of the Southern Region with negative results in all states in the nonregulated area. These surveys involved 90,337 bushels of gin trash and 10,584 lint cleaner inspections. A total of 119,876 bollworms was recovered; all of these were in Texas and Oklahoma with the exception of 6 in Arkansas and 3 in Louisiana. In 35 eastern Texas counties, dry boll inspection in the spring indicated that a very light population had survived the winter.

Adverse weather conditions delayed cultural control practices, where required, in all states. However, the moisture aided in the decomposition of the plant residues. Very little difficulty was encountered in enforcing all regulatory requirements during the year.

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TRIPER HOLLERED AND YEAHNS SURVEY AND DETECTION REPORT

REGION

Southern.

REPORTING PERIOD (From-To)
7/1/60 - 6/30/61

65



REGULATORY ACTIVITY REPORT

REGION

Southern

Pink Bollworm

REPORTING PERIOD (From-To)

7/1/60 - 6/30/61

Segment of operation.

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

CONTROL ACCOMPLISHMENT REPORT

STATE

DISTRICT

REGION

Southern

PROGRAM

Pink Bollworm

REPORTING PERIOD (From-To)

7/1/60 - 6/30/61

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REGULATORY SUMMARY

Program Pink Bollworm
Region Southern

Fiscal Year 1961

| | Arkansas | Louisiana | Oklahoma | Texas | Total |
|---|-----------|-----------|----------|-----------|-----------|
| Counties under quarantine | 55 | 26 | 77 | 254 | 412 |
| Estimated acres in cotton | 1,370,000 | 151,096 | 655,710 | 6,117,832 | 8,294,638 |
| Estimated acres in okra | 1,500 | 2,107 | 350 | 3,315 | 7,272 |
| Estimated growers | 61,293 | 11,923 | 24,573 | 103,068 | 200,857 |
| Visits to processing plants | 6,630 | 3,315 | 2,035 | 23,839 | 35,819 |
| Certificates issued | 16,701 | 6,660 | 1,277 | 131,313 | 155,951 |
| Establishments under dealer-carrier agreements: | | | | | |
| Cotton gins | 146 | 83 | 212 | 7 | 448 |
| Oil mills | 16 | 11 | 5 | 42 | 74 |
| Compresses and warehouses | 49 | 22 | 23 | - | 94 |
| Belinting plants | 11 | 1 | 7 | 8 | 27 |
| Fumigation plants | - | 1 | 1 | 15 | 17 |
| Vacuum fumigation plants | - | - | - | 1 | 1 |
| Other handlers and dealers | 253 | 2 | 21 | 37 | 313 |
| Plants with heaters to treat seed | 33 | 66 | - | 5 | 104 |
| Mechanical cotton pickers fumigated | 20 | 9 | - | 283 | 312 |



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Pink Bollworm

SUMMARY OF ASSOCIATED ACTIVITIES

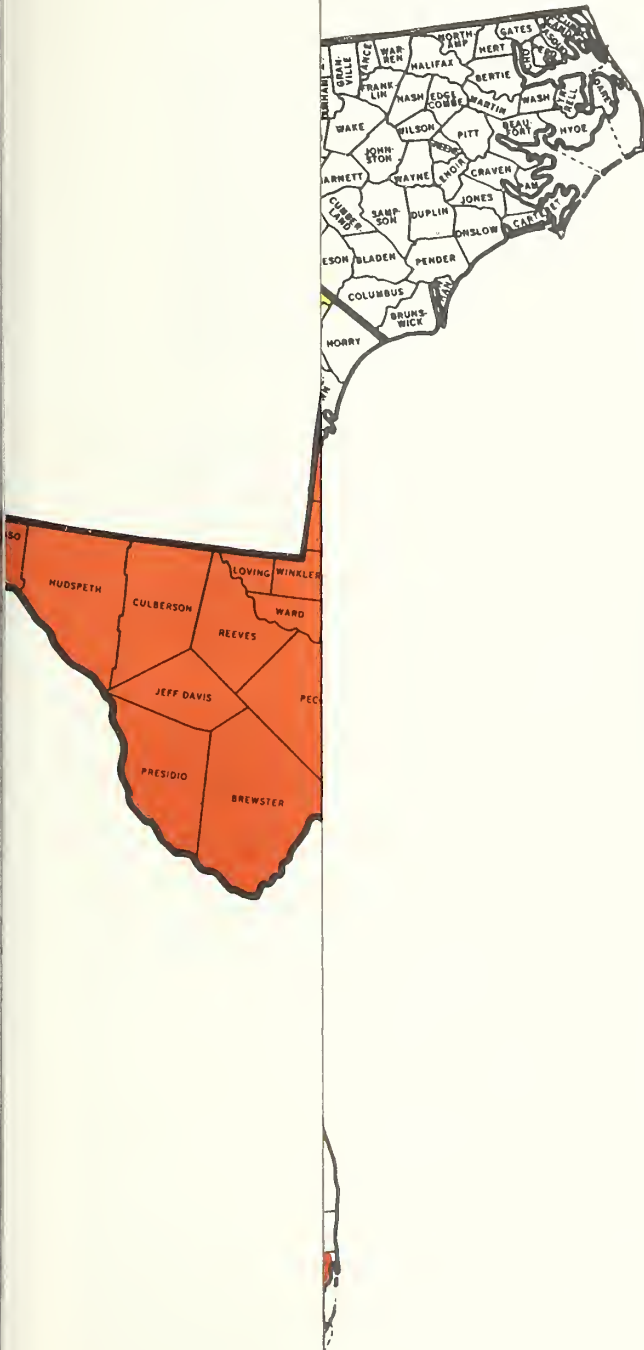
Prepared by: _____

Region Southern

Fiscal year 1961

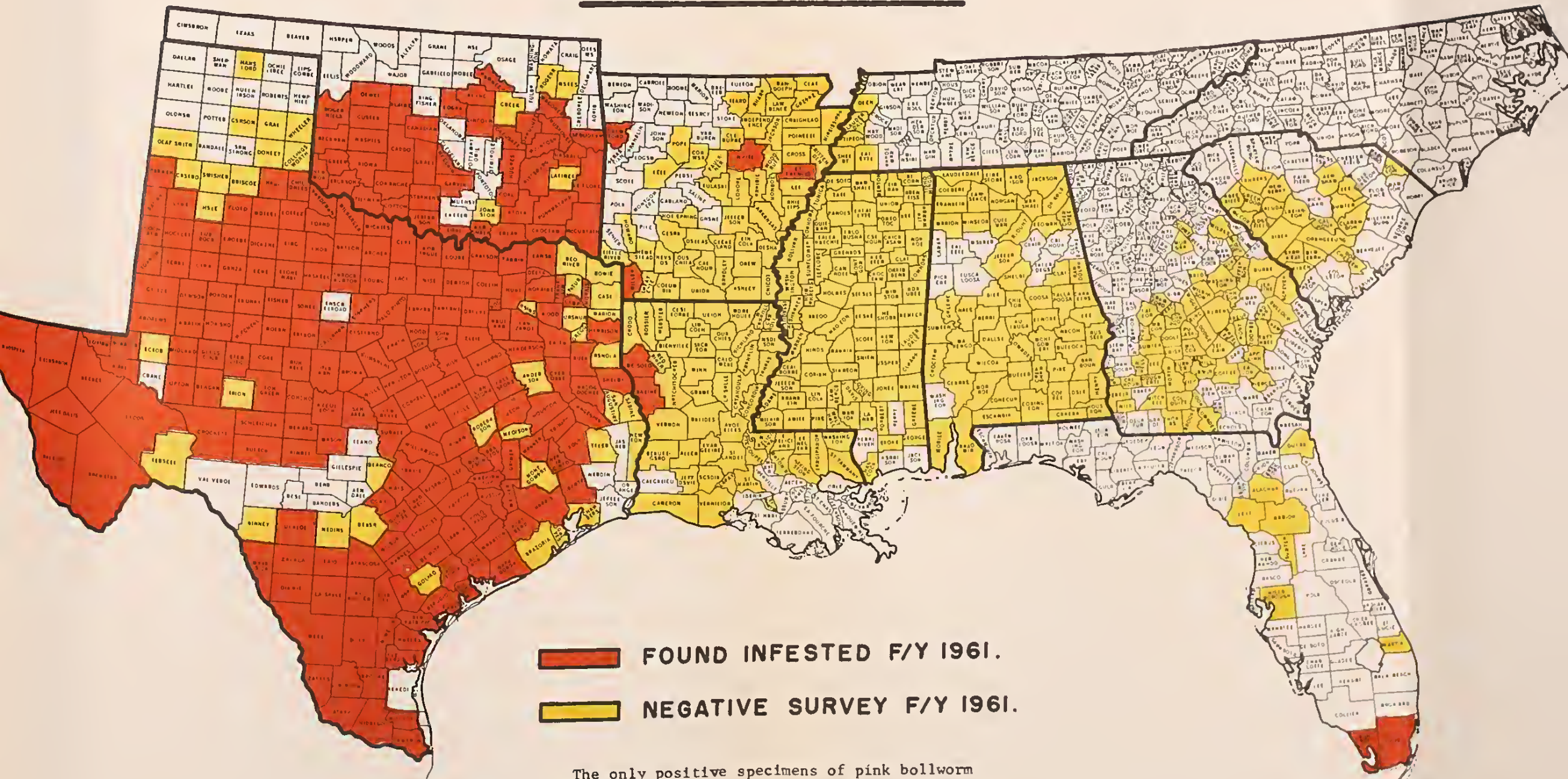
| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | Feature & News Stories* | Extent These Aids Were Used | | | Special Reports |
|-------------|--------------------------|---------------------------|--------|-------|----------|-------------------------|-----------------------------|------|------|-----------------|
| | | Talks | Slides | Films | Radio TV | | Exhibits | Bul. | Cir. | |
| Arkansas | 4 | | | | | | | | | |
| Florida | | 1 | | | | 1 | 1 | 17 | 10 | |
| Mississippi | | | | | | | | 75 | | |
| Oklahoma | 18 | 18 | | | 1 | 2 | | | 6000 | |
| Texas | 18 | 4 | 6 | 8 | | 47 | | 50 | 2600 | 1 |
| Total | 40 | 23 | 6 | 8 | 1 | 50 | 1 | 142 | 8610 | 1 |





UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

PINK BOLLWORM



The only positive specimens of pink bollworm collected in Florida were found on hibiscus, dooryard cotton, wild cotton, or okra.



SOYBEAN CYST NEMATODE

The program is carried out by conducting effective surveys for the pest, preventing spread through regulatory action, and advising growers to follow crop rotation practices. No chemical control of the soybean cyst nematode is practicable. Investigations are continuing to develop practical and effective control measures as well as resistant varieties of commercially acceptable soybeans.

During the year, surveys were carried out on 19,507 properties involving a little over 698,000 acres in the states of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, and Tennessee. Infestations were found for the first time in Clay, Greene, and Poinsett Counties, Arkansas. Additional infestations were found in previously known infested counties in the states of Arkansas, Tennessee, Mississippi, and North Carolina. Surveys in the infested area of De Soto County, Mississippi, which was fumigated with DD in 1959, showed that the treatment was not effective in eradicating the soybean cyst nematode.

The airplane is a valuable tool for field inspections in North Carolina. The symptoms of soybean cyst nematode attack are dwarfing and yellowing of the plants. These symptoms can be observed readily from the air. Infested land has been leased in Pender County (28 acres) and in Camden County (25 acres) where studies on crop rotation and nematocides are under way. Presently, farmers with infested land are using crop rotation and planting non-host crops to reduce cyst populations in the soil.

A Federal Court conviction was obtained this year against a construction company in Arkansas for violation of the quarantine involving the movement of equipment from one state to another.

On the basis of a special report compiled in the state of Tennessee with the assistance of several county agricultural agents, it is believed that a loss of approximately \$765,000 resulted from damage by the soybean cyst nematode in that state.

1. The first part of the report
describes the general situation
of the country and the
state of the economy.

2. The second part of the report
describes the results of the
survey and the findings of the
research.

3. The third part of the report
describes the conclusions of the
research and the recommendations
for further action.

4. The fourth part of the report
describes the appendixes and the
references.

5. The fifth part of the report
describes the summary and the
concluding remarks.

6. The sixth part of the report
describes the bibliography and the
list of references.

7. The seventh part of the report
describes the index and the
list of contents.

8. The eighth part of the report
describes the appendixes and the
references.

9. The ninth part of the report
describes the summary and the
concluding remarks.

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describes the appendixes and the
references.

SURVEY AND DETECTION REPORT

Southern

REPORTING PERIOD (From-To)
7/1/60 - 6/30/61

| STATE | SURVEYED | | | INFESTED | | | | | | | | |
|----------------------|---|--------------------------------|----------------------------|---|--|---|--|---------------------------------|---------------------------------|----------------------------|----------------------------|---------------------------------|
| | 01
NUMBER
PROPERTIES
SURVEYED
A | 02
NUMBER
SQ. MILES
C | 03
NUMBER
ACRES
D | 04
NUMBER
TRAPS
IN
USE
E | 05
NUMBER
HOSTS
EXAMINED
F | 06
NUMBER
SAMPLES
COLLECTED
G | 07
NUMBER
POSITIVE
SPECIMENS
H | 08
NUMBER
PROPERTIES
I | 09
NUMBER
CUBIC FEET
J | 10
NUMBER
ACRES
K | 11
NUMBER
HOSTS
L | 12
NUMBER
PROPERTIES
M |
| Alabama | 395 | | 11670 | | | 249 | | | | | | |
| Arkansas | 1434 | | 47295 | | | 6659 | | 40 | | 1764 | | |
| Florida | 1 | | 10 | | | 2 | | | | | | |
| Georgia | 426 | | 9890 | | | 61 | | | | | | |
| Louisiana | 702 | | 57031 | | | 993 | | | | | | |
| Mississippi | 1451 | | 127366 | | | 2083 | | 1 | | 20 | | |
| North
Carolina | 1864 | | 68654 | | | 2076 | 39 | 14 | | 809 | | |
| Oklahoma | 152 | | 3981 | | | 195 | | | | | | |
| South
Carolina | 10176 | | 263496 | | | 461 | | | | | | |
| Tennessee | 2906 | | 108711 | | | 8895 | 12 | 48 | | 3426 | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| TOTAL
FROM JULY 1 | 19,507 | | 698,104 | | | 21674 | 51 | 103 | | 6019 | | |

REGULATORY ACTIVITY REPORT

DISY AICr

Southern NOISE

THE NEW YORK PUBLIC LIBRARY

7/1/60 - 6/30/61

Soybean Cyst Nematode

* Segment of operation.

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Soybean Cyst Nematode

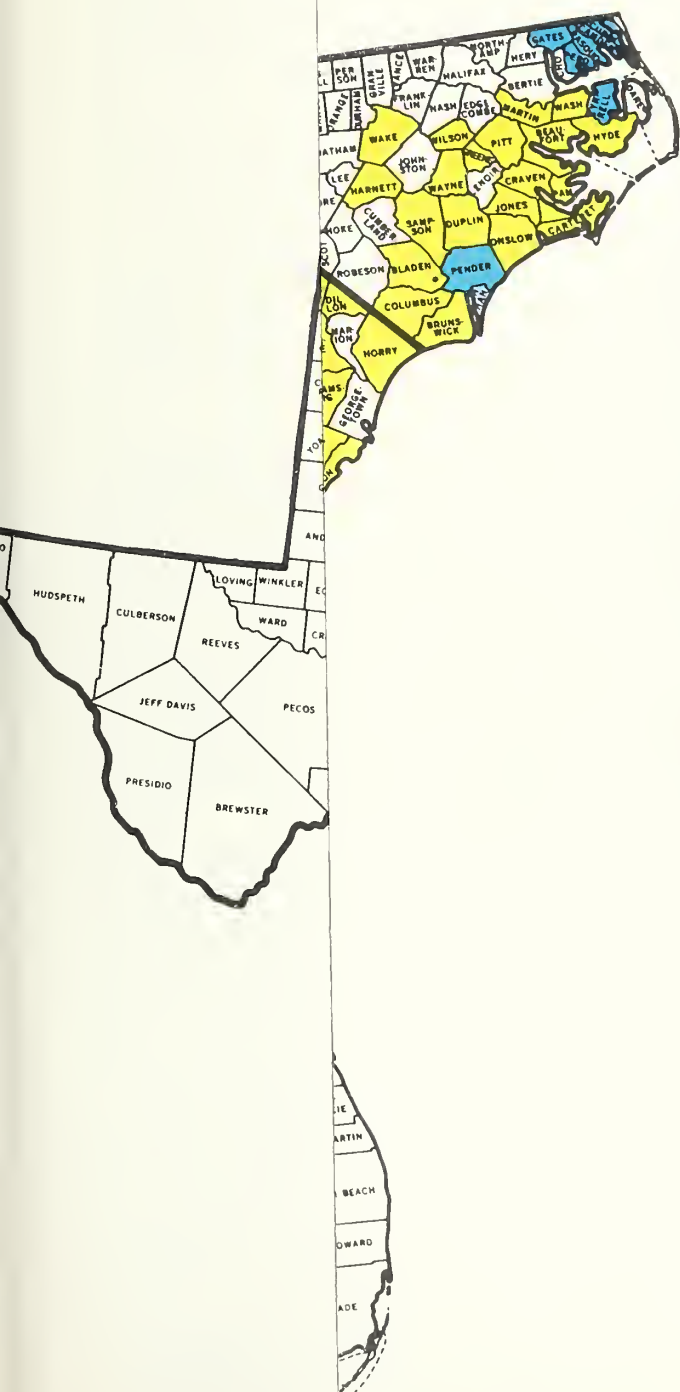
SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by: _____

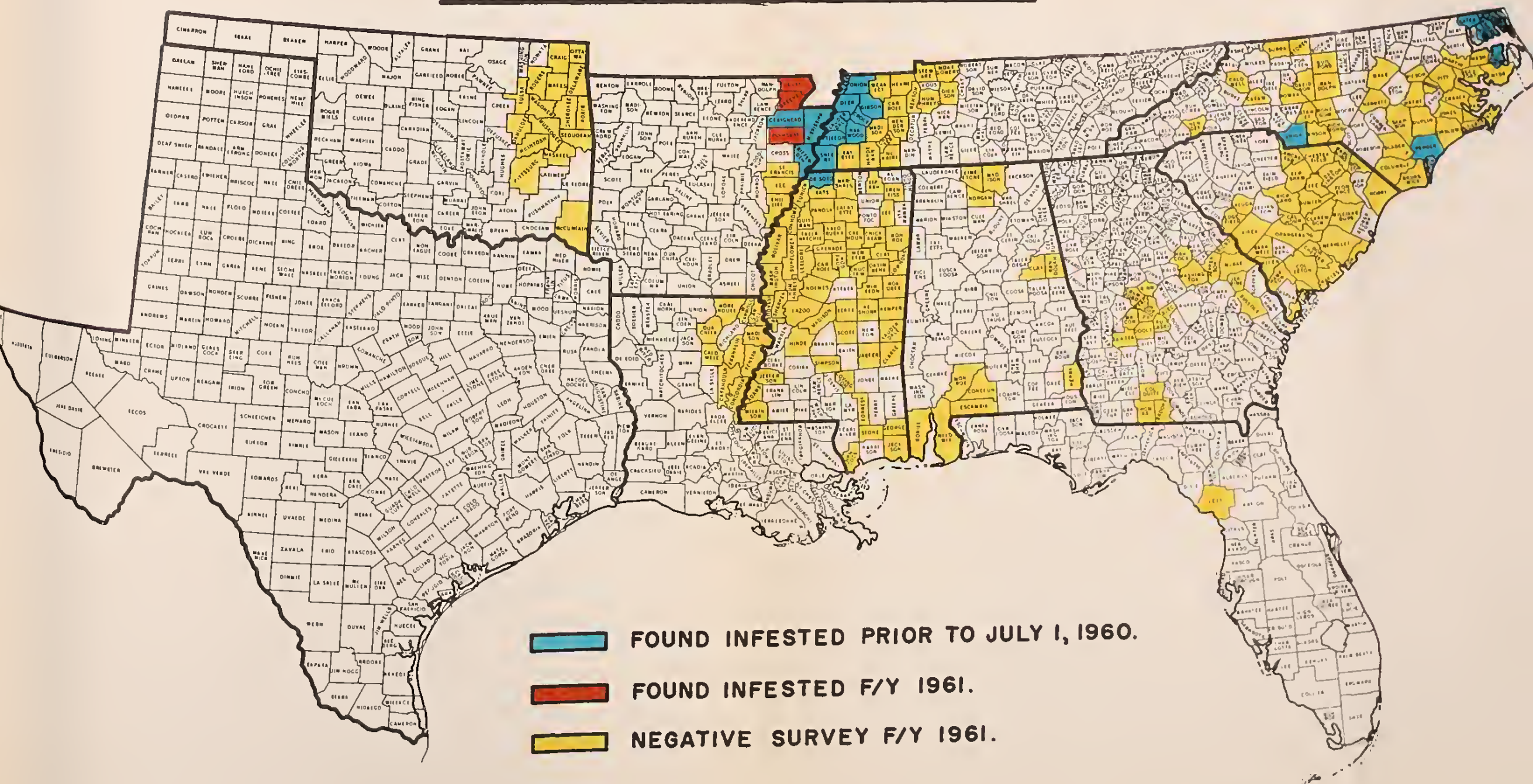
Region Southern

Fiscal year 1961

| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | Special Reports |
|----------------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|------|------|-----------------|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul. | Cir. | |
| Arkansas | | | | | | | | 1000 | | | |
| Florida | | 1 | | | | | | 29 | 19 | | |
| Georgia | | | 1 | | | | | 1 | | | |
| Mississippi | | | | | | | | 200 | | | |
| North Carolina | 192 | 393 | 91 | | | | | 75 | 218 | 24 | |
| South Carolina | 14 | 156 | 137 | | 5 | 1 | | | 155 | 93 | |
| Total | 206 | 550 | 229 | | 5 | 1 | | 1305 | 392 | 117 | |



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION
SOYBEAN CYST NEMATODE



SWEETPOTATO WEEVIL

Cooperative sweetpotato weevil eradication and control activities were conducted during the year in the states of Alabama, Florida, Georgia, Louisiana, Mississippi, and South Carolina. In Texas, the State Department of Agriculture is responsible for program activities and the Division merely assists by furnishing a limited amount of insecticide for demonstrational and educational work. Limited inspections were made in the states of Arkansas and Tennessee.

The entire state of Florida is considered to be generally infested. Practically all of the sweetpotatoes for home consumption and commercial production are produced in 18 northwestern counties. These counties are considered as a control area, and efforts are made by the Division of Plant Industry and the PPC Division to assist the growers in producing weevil-free potatoes. The Extension Service also assists by disseminating program information and setting up demonstrational plots to show the growers that weevil-free potatoes can be produced when recommended practices are carried out.

The program in South Carolina differs from that in most of the infested states in that no active infestations are known to occur in sweetpotato plantings; all infestations are confined to the wild host, morning-glories. A very active program has been carried out in South Carolina for a number of years which is designed to prevent the establishment of the pest in commercial sweetpotato-producing areas and progressively eradicate the insect from wild hosts. Established infestations of the sweetpotato weevil are presently known to exist along the coastal areas of Beaufort and Charleston Counties. Considerable progress has been made in reducing the weevil population in these areas through the application of herbicides and the enforcement of the State Quarantine.

The most intensive program is being conducted in Louisiana, a major sweetpotato-producing state. The southern portion of the state is designated as a control area; whereas, the central part of the state has been designated as an eradication area. The northern one-third of the state is noninfested. As a result of surveys carried out in the state of Louisiana, approximately 140 properties were found infested and over 400 properties were released from quarantine restrictions. Control activities included the cleaning of over 7500 storage sites and nearly 7000 seedbeds. In addition, insecticidal applications were applied to over 600 seedbeds, and 5000 acres of sweetpotatoes. The dusting of sweetpotatoes as they are put into storage is an important phase of the program, and in Louisiana over 540,000 bushels were dusted.

Active programs also are being carried out in the states of Mississippi, Alabama, and Georgia. In the seven states of the Region where active programs are being conducted, new infestations were found on approximately 400 properties and over 580 properties were released from quarantine regulation.

SURVEY AND DETECTION REPORT

Southern

REPORTING PERIOD (From-To)
7/1/60 6/30/61

| STATE

A | SURVEYED | | | 04
NUMBER
TRAPS
IN
USE

E | 05
NUMBER
HOSTS
EXAMINED

F | 06
NUMBER
SAMPLES
COLLECTED

G | 07
NUMBER
POSITIVE
SPECIMENS

H | 08
NUMBER
PROPERTIES

I | 09
NUMBER
CUBIC FEET

J | INFESTED | | | 11
NUMBER
HOSTS

L | INTER-
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M |
|-------------------|---|------------------------------------|--------------------------------|---|--|---|--|-------------------------------------|-------------------------------------|--------------------------------|--|--|--------------------------------|-------------------------|
| | 01
NUMBER
PROPERTIES
SURVEYED

B | 02
NUMBER
SQ. MILES

C | 03
NUMBER
ACRES

D | | | | | | | 10
NUMBER
ACRES

K | | | | |
| Alabama | 538 | | | | | | | 77 | | | | | | |
| Arkansas | 3 | | | | | | | | | | | | | |
| Florida | 2 | | | | | | | 2 | | | | | | |
| Georgia | 3137 | | | | | | | 187 | | | | | | |
| Louisiana | 13943 | | | | | | | 140 | | | | | | |
| Mississippi | 2329 | | | | | | | 34 | | | | | | |
| South
Carolina | 1316 | | | | | | | 3 | | | | | | |
| Tennessee | 1 | | | | | | | | | | | | | |
| Texas | 2023 | | | | | | | | | | | | | |
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U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

CONTROL ACCOMPLISHMENT REPORT

[illegible]

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Sweetpotato Weevil

SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by: _____

Region Southern

Fiscal year _____

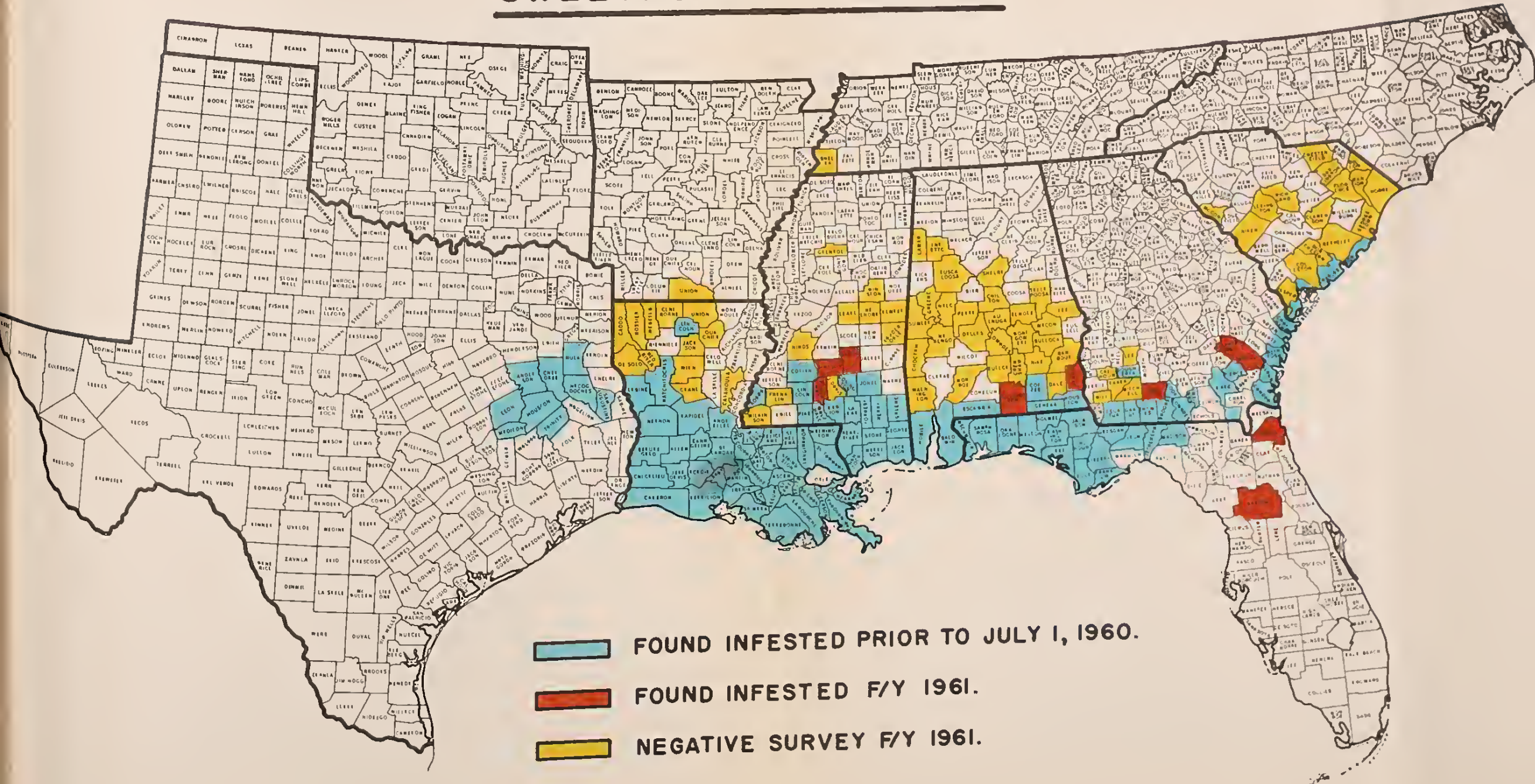
1961

| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | Special Reports |
|----------------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|------|------|-----------------|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul. | Cir. | |
| Florida | 1 | 2 | | | | | | 44 | 28 | | |
| Georgia | 16 | 16 | 1 | | 3 | | 6 | 65 | 50 | 35 | |
| Mississippi | | | | | | | | 150 | | | |
| South Carolina | 28 | 157 | 159 | | 12 | 1 | 4 | 20 | 1085 | 116 | |
| Total | 45 | 175 | 160 | | 15 | 1 | 10 | 279 | 1163 | 151 | |



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

SWEETPOTATO WEEVIL



WHITE-FRINGED BEETLE

Larval and adult inspections this year were more extensive than in previous years, and infestations of white-fringed beetle were found for the first time in three counties in Alabama, one county in Georgia, four counties in North Carolina, one county in Mississippi, eight counties in Tennessee, and three counties in Arkansas. Spot reinfestations also were found in some areas where treatment had been completed. Populations over the area in general were light, with only a few areas where crop damage was observed. Several small and widely-scattered infestations were found in western Tennessee and northeastern Arkansas. These infestations appear to have originated from an older infestation at Memphis, Tennessee. A vigorous effort is being made to find and eradicate all such infestations and at the same time reduce the possibility of spread from Memphis. All known infestations in Arkansas were treated as of June 30, 1961; and with a few exceptions, the same is true in Tennessee. Eradication efforts are under way in the Carolinas and elsewhere on the periphery of the generally infested area.

Insecticide control and eradication treatments were applied to the environs of processing plants, gravel pits, nurseries, nursery retail sales yards, and to roadsides. Retreatment of a number of nurseries was required. Considerable progress was made in the treatment of urban properties, especially in Memphis, Tennessee, and Bogalusa, Louisiana. Many of the newly found infestations throughout the region were confined to small areas and received immediate treatment. In some instances, a dual treatment for both white-fringed beetle and imported fire ant was applied.

Regulatory work consisted for the most part of the inspection and certification of products grown or processed in the regulated areas. Treatment of nurseries and dissemination points to render products eligible for movement without further treatment has lightened the regulatory workload a great deal. Several counties were removed from the regulated area as they had been found free of infestation for the required period.

SURVEY AND DETECTION REPORT

83

7/1/60 - 6/30/61

[illegible]

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

CONTROL ACCOMPLISHMENT REPORT

STATE

DISTRICT

REGION

Southern

PROGRAM

White Fringed Beetle

REPORTING PERIOD (FROM - TO)
7/1/60 - 6/30/61

| STATE | 01
PROP.
ENTRIES | 02
CUBIC FEET
D | FUMIGATION | | INSECTICIDE | | | HERBICIDE | | | MECHANICAL | | | BIOLOGICAL
CONTROL |
|-------------------|------------------------|-----------------------|-------------------------------------|------------------|-------------------|----------------|---------------------------|--------------------|-------------------|------------------|-------------------|------------------|----------------------|-----------------------|
| | | | 03
NO. OF
HOST
PLANTS
E | 04
ACRES
F | 05
GROUND
G | 06
AIR
H | NUMBER TREATED | | 09
PLANTS
K | 10
ACRES
L | NUMBER TREATED | | 13
NO. ACRES
O | |
| | | | | | | | 07
HOST
PLANTS
I | 08
BUSHELS
J | | | 11
PLANTS
M | 12
ACRES
N | | |
| Alabama | | | | | 9744 | 7159 | | | | | | | | |
| Arkansas | | | | | 127 | 2606 | | | | | | | | |
| Georgia | | | | | 8410 | 1743 | | | | | | | | |
| Louisiana | | | | | 7108 | 1325 | | | | | | | | |
| Mississippi | | | | | 6159 | | | | | | | | | |
| North Carolina | | | | | 7706 | | | | | | | | | |
| South Carolina | | | | | 575 | | | | | | | | | |
| Tennessee | | | | | 5396 | 3580 | | | | | | | | |
| | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | |
| TOTAL FROM JULY 1 | | | | | 45,225 | 16,413 | | | | | | | | |

STATUS OF WHITE-FRINGED BEETLE PROGRAM

Region: Southern

Date: June 30, 1961

| State | Estimated Acres | | | Number Counties | | |
|----------------|--|--|---|--|----------------------------------|---|
| | Found infested from beginning of program B | Infested area treated, treatment still effective * C | Infested area remaining to be treated D | Found infested from beginning of program E | All known infestations treated F | Infestation eradicated (negative survey for 3 or more consecutive years G |
| Alabama | 305,268 | 85,073 | 220,195 | 33 | 14 | 0 |
| Arkansas | 1,645 | 1,645 | 0 | 4 | 4 | 0 |
| Florida | 140,788 | 50,354 | 90,434 | 9 | 0 | 0 |
| Georgia | 371,332 | 99,784 | 271,548 | 78 | 18 | 7 |
| Louisiana | 31,545 | 18,178 | 13,367 | 13 | 3 | 2 |
| Mississippi | 185,467 | 20,053 | 165,414 | 49 | 13 | 2 |
| North Carolina | 45,374 | 29,857 | 15,517 | 32 | 27 | 1 |
| South Carolina | 6,137 | 6,137 | 0 | 10 | 9 | 1 |
| Tennessee | 57,856 | 19,580 | 38,276 | 18 | 15 | 1 |
| Total | 1,145,412 | 330,661 | 814,751 | 246 | 103 | 14 |

* Does not include periphery, retreatment, treatment for regulatory or precautionary purposes, etc.
 ** These counties not included in column F.

STATUS OF WHITE-FRINGED BEETLE POPULATIONS

Region Southern

Date June 30, 1961

| State | No specimens found | | Light populations | | Moderate populations | | Heavy populations | | Total | |
|-------------|--------------------|----------|-------------------|----------|----------------------|----------|-------------------|----------|-----------|----------|
| | Acres | Per-cent | Acres | Per-cent | Acres | Per-cent | Acres | Per-cent | Acres | Per-cent |
| Alabama | 84,813 | 23 | 151,904 | 49 | 62,716 | 21 | 5,830 | 2 | 305,263 | 100 |
| Arkansas | | | 1,645 | 100 | | | | | 1,645 | 100 |
| Florida | 74,582 | 53 | 28,322 | 20 | 25,665 | 13 | 12,219 | 9 | 140,738 | 100 |
| Georgia | 137,058 | 37 | 173,076 | 47 | 53,906 | 14 | 6,676 | 2 | 370,716 | 100 |
| Louisiana | 23,829 | 76 | 7,121 | 23 | 320 | 1 | | | 31,270 | 100 |
| Mississippi | 62,422 | 33 | 91,898 | 49 | 27,591 | 15 | 4,618 | 3 | 186,529 | 100 |
| N. Carolina | 22,918 | 50 | 14,793 | 33 | 7,064 | 16 | 584 | 1 | 45,359 | 100 |
| S. Carolina | 5,374 | 88 | 712 | 12 | | | | | 6,086 | 100 |
| Tennessee | 16,896 | 29 | 26,443 | 46 | 13,860 | 24 | 609 | 1 | 57,808 | 100 |
| Total | 427,897 | 37 | 495,914 | 43 | 191,122 | 17 | 30,536 | 3 | 1,145,469 | 100 |

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program White-Fringed Beetle

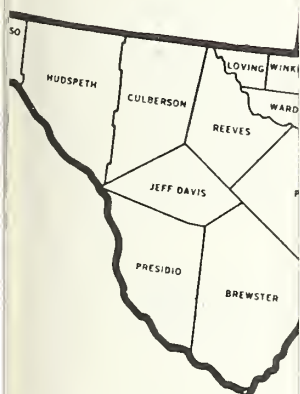
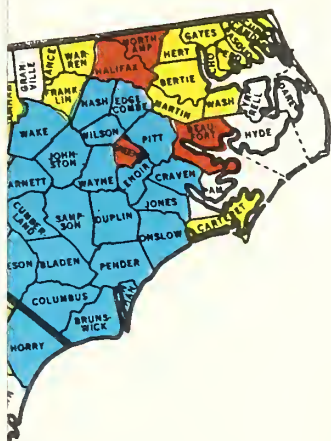
SUMMARY OF ASSOCIATED ACTIVITIES

Prepared by: _____

Region Southern

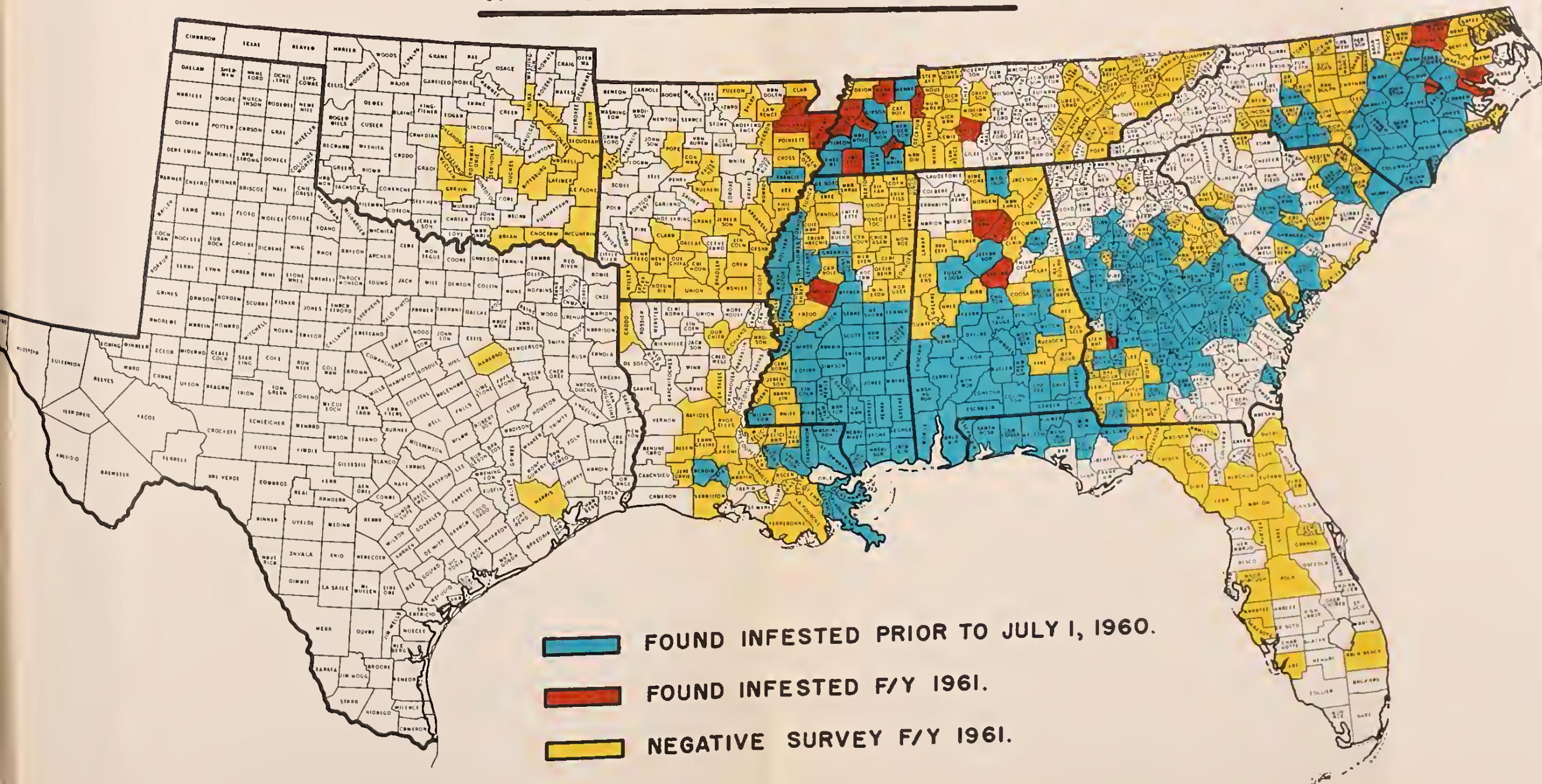
Fiscal year 1961

| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | | Special Reports |
|----------------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|------|------|------------------------|-----------------|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul. | Cir. | Infest. Maps & Posters | |
| Alabama | 31 | 23 | 7 | 5 | 6 | | 2 | 162 | | | 20 | 4 |
| Arkansas | | | | | | | | 500 | | | | |
| Florida | 4 | 5 | 5 | | 2 | | 1 | 91 | 86 | | 32 | |
| Georgia | 55 | 29 | 23 | | 1 | 1 | 15 | 456 | 422 | | 88 | |
| Mississippi | | | | | | | | 200 | | | | |
| North Carolina | 210 | 500 | 1542 | | 3 | | | 80 | 39 | | 26 | |
| South Carolina | 33 | 158 | 157 | | 18 | 3 | 9 | 75 | 405 | | 157 | 1 |
| Total | 333 | 715 | 1734 | 5 | 30 | 4 | 27 | 1564 | 952 | | 323 | 5 |



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

WHITE - FRINGED BEETLE



WILD COTTON

The Wild Cotton Eradication Program is conducted for the purpose of preventing the spread of the pink bollworm to the commercial cotton-producing areas in the southeastern states. This is accomplished by locating and destroying all wild and ornamental cotton plants and their fruiting forms in several of the South Florida counties where these plants are known to occur. In previous years hibiscus plants, which are secondary hosts, have been found infested on Plantation Key. In order to eliminate such infestations, insecticides are applied when hibiscus plantings are found infested.

During the fiscal year, 10,594 acres capable of supporting wild cotton plants were surveyed in eleven south Florida counties. A total of 6,645 wild cotton plants was destroyed, 17,380 less than the previous year. This reduction was probably the result of Hurricane Donna, since during the height of the storm some 6 to 8 feet of salt water covered much of the area capable of supporting wild cotton plants. Two locations were found infested with pink bollworms, one in central Monroe County and the other on dooryard cotton in south Dade County.

On Plantation Key, hibiscus plants previously found infested were kept under observation. The inspection of over 15,500 hibiscus blooms in the area revealed that light infestations of pink bollworms occurred four times during the season and that one new property located approximately six miles south of the original infested site also had a very light infestation. Insecticide applications of DDT and Sevin applied at regular intervals to infested hibiscus plantings apparently held the infestation at an undetectable level, and applications were discontinued in November 1960, after a period of negative survey.

Since Okra is a secondary host of pink bollworm and is shipped to markets outside the state, over 3,000 pods of okra were inspected in Dade and Monroe Counties with negative results.

The use of granular herbicide was continued on the Mainland Keys in areas where wild cotton plants were actually found. This material kills young plants for a short time, but larger plants are treated with Ammate. Some additional scouting was done on Sanibel Island, Lee County, and numerous wild cotton plants were found.

SURVEY AND DETECTION REPORT

REGIONS

Southern

REPORTING PERIOD (From-To)
7/1/60 - 6/30/61

Wild Cotton

[illegible]

CONTROL ACCOMPLISHMENT REPORT

REGION

Southern

REPORTING PERIOD (From-To)
7/1/60 - 6/30/61

Wild Cotton

| STATE

A | 01
PROP
ERTIES
10 | FUMIGATION | | | INSECTICIDE | | | | HERBICIDE | | | MECHANICAL | | BIOLOGICAL
CONTROL

NO. ACRES
O |
|----------------|----------------------------|-----------------------|-------------------------------------|------------------|-------------------|----------------|----------------------|-------------------|-------------------|------------------|-------------------|------------------|--|---|
| | | 02
CUBIC FEET
D | 03
NO. OF
HOST
PLANTS
E | 04
ACRES
F | ACRES TREATED | | NUMBER TREATED | | NUMBER TREATED | | NUMBER TREATED | | | |
| | TREATMENT
NUMBER *
C | | | | 05
GROUND
G | 06
AIR
H | 07
HOST
PLANTS | 08
BUSHES
J | 09
PLANTS
K | 10
ACRES
L | 11
PLANTS
M | 12
ACRES
N | | |
| Florida | | | | | | | | | | | 6645 | 10594 | | |
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UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Wild Cotton SUMMARY OF ASSOCIATED ACTIVITIES Prepared by: _____
Region Southern Fiscal year 1961

| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | | Special Reports |
|---------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|------|------|------------------------|-----------------|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul. | Cir. | Infest, Maps & Posters | |
| Florida | | 1 | | | | 1 | 2 | | | | | 1 |
| Total | | 1 | | | | 1 | 2 | | | | | 1 |

WITCHWEED

There are approximately 8,000 farms in the Carolinas known to be infested with witchweed. The infestation consists of a continuous area involving 19 North Carolina counties and 8 South Carolina counties. Robeson County, North Carolina, the geographical center of this infestation, has the largest infested acreage (about 81,000) and the greatest number of infested farms (over 3,100). Approximately 167,000 acres are known to be infested; 125,000 acres in North Carolina, and 42,000 acres in South Carolina.

During the year, all counties in South Carolina and a majority of those in North Carolina were surveyed; four new counties in North Carolina and one new county in South Carolina were found infested. No infestations are known to exist in other states of the Southern Region.

The purpose of the control program is to destroy witchweed plants before seed can be produced. This is done primarily by post-emergence applications of the herbicide 2,4-D. Approximately 300,000 acres were treated by this method during the year, two-thirds of which was done under contract by commercial operators under the supervision of an inspector. A second method of control is the use of catch crops. This involves the planting of two crops of corn during a growing season with each crop being destroyed before the witchweed plants germinate and produce seed. A winter cover crop is planted on this land in the fall.

These two control measures are supplemented by the use of mechanical methods to destroy witchweed plants. Such measures vary from hand-hoeing to disking of the land.

State and Federal quarantines regulate the movement of crops and equipment from the infested farms. Fortunately, most crops grown in the area are processed locally before being shipped to the distant markets. The control programs, the sanitary procedures worked out for the handling of the crop from harvest to processor, and fumigation are relied upon to remove infestation. Each crop grown in the regulated area has been studied and procedures developed for safe marketing of the products. Dealer-carrier agreements are in effect for each processor who handles regulated commodities.

There are approximately 100,000 people in the United States who are involved in the production of nuclear weapons. This includes the design, development, production, and testing of nuclear weapons. The production of nuclear weapons is a complex process that involves the use of highly specialized equipment and facilities. The production of nuclear weapons is also a highly regulated process that is subject to strict controls and oversight.

During the 1950s, the United States was the only country in the world that was capable of producing nuclear weapons. This was due to the fact that the United States had developed the first nuclear weapons during the 1940s. The United States was also the only country in the world that had a large stockpile of nuclear weapons.

The production of nuclear weapons is a highly complex process that involves the use of highly specialized equipment and facilities. The production of nuclear weapons is also a highly regulated process that is subject to strict controls and oversight. The production of nuclear weapons is a process that is subject to a number of different risks, including the risk of nuclear war, the risk of nuclear terrorism, and the risk of nuclear proliferation.

There are a number of different methods that can be used to produce nuclear weapons. These methods include the use of nuclear reactors, the use of nuclear accelerators, and the use of nuclear weapons. Each of these methods has its own set of advantages and disadvantages.

In the 1950s, the United States was the only country in the world that was capable of producing nuclear weapons. This was due to the fact that the United States had developed the first nuclear weapons during the 1940s. The United States was also the only country in the world that had a large stockpile of nuclear weapons. The production of nuclear weapons is a highly complex process that involves the use of highly specialized equipment and facilities. The production of nuclear weapons is also a highly regulated process that is subject to strict controls and oversight.

SURVEY AND DETECTION REPORT

| U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION | | | | STATE | | DISTRICT | | REGION | | | | | |
|---|---|--------------------------------|----------------------------|---|--|---|--|--|---------------------------------|----------------------------|----------------------------|---------------------------------|--|
| SURVEY AND DETECTION REPORT | | | | PROGRAM | | Witchweed | | REPORTING PERIOD (From-To)
7/1/60 - 6/30/61 | | | | | |
| STATE

A | SURVEYED | | | 04
NUMBER
TRAPS
IN
USE
E | 05
NUMBER
HOSTS
EXAMINED
F | 06
NUMBER
SAMPLES
COLLECTED
G | 07
NUMBER
POSITIVE
SPECIMENS
H | INFESTED | | | | | |
| | 01
NUMBER
PROPERTIES
SURVEYED
B | 02
NUMBER
SQ. MILES
C | 03
NUMBER
ACRES
D | | | | | 08
NUMBER
PROPERTIES
I | 09
NUMBER
CUBIC FEET
J | 10
NUMBER
ACRES
K | 11
NUMBER
HOSTS
L | 12
NUMBER
PROPERTIES
M | |
| Alabama | 2515 | | 43041 | | | | | | | | | | |
| Arkansas | 249 | | 3850 | | | | | | | | | | |
| Florida | 284 | | 20324 | | | | | | | | | | |
| Georgia | 2286 | | 35500 | | | | | | | | | | |
| Louisiana | 1979 | | 26176 | | | | | | | | | | |
| Mississippi | 1970 | | 28084 | | | | | | | | | | |
| North
Carolina | 43944 | | 686736 | | | | | 1569 | | 46634 | | | |
| Oklahoma | 418 | | 7748 | | | | | | | | | | |
| South
Carolina | 14406 | | 355678 | | | | | 280 | | 3212 | | | |
| Tennessee | 507 | | 11496 | | | | | | | | | | |
| Texas | 921 | | 13439 | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| TOTAL
FROM JULY 1 | 69,479 | | 1232072 | | | | | 1849 | | 49846 | | | |

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

REGULATORY ACTIVITY REPORT

STATE

DISTRICT

REGION

Southern

REPORTING PERIOD (From-To)

7/1/60 - 6/30/61

PROGRAM

Witchweed

INSPECTION FOR CERTIFICATION

ACRES TREATED FOR CERTIFICATION PURPOSES

CLASS OF ALLIGATORWOOD

COMMODITY TREATMENT QUANTITY (plants, tons, bales, etc.)

09

01

02

03

04

05

06

07

08

09

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

STATE

North Carolina

South Carolina

1108

174

2665

86

27

32

639

887623

1

121946

243

1328

883951

1

122189

1441

174

10283

106

117

119

639

883951

1

122189

1441

174

10283

106

117

119

639

883951

1

122189

1441

174

10283

106

117

119

639

883951

1

122189

* Segment of operation.

CONTROL ACCOMPLISHMENT REPORT

NOTES

Southern

REPORTING PERIOD (From-To)

Witchweed

7/1/60 - 6/30/61

[illegible]

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

Program Witchweed

SUMMARY OF ASSOCIATED ACTIVITIES

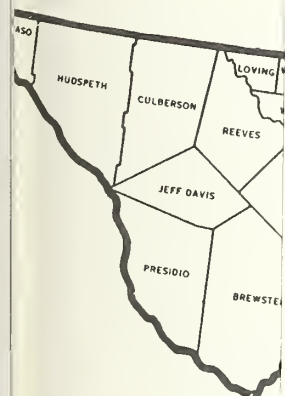
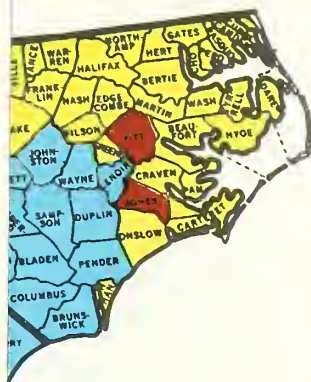
Prepared by: _____

Region Southern

Fiscal year _____

1961

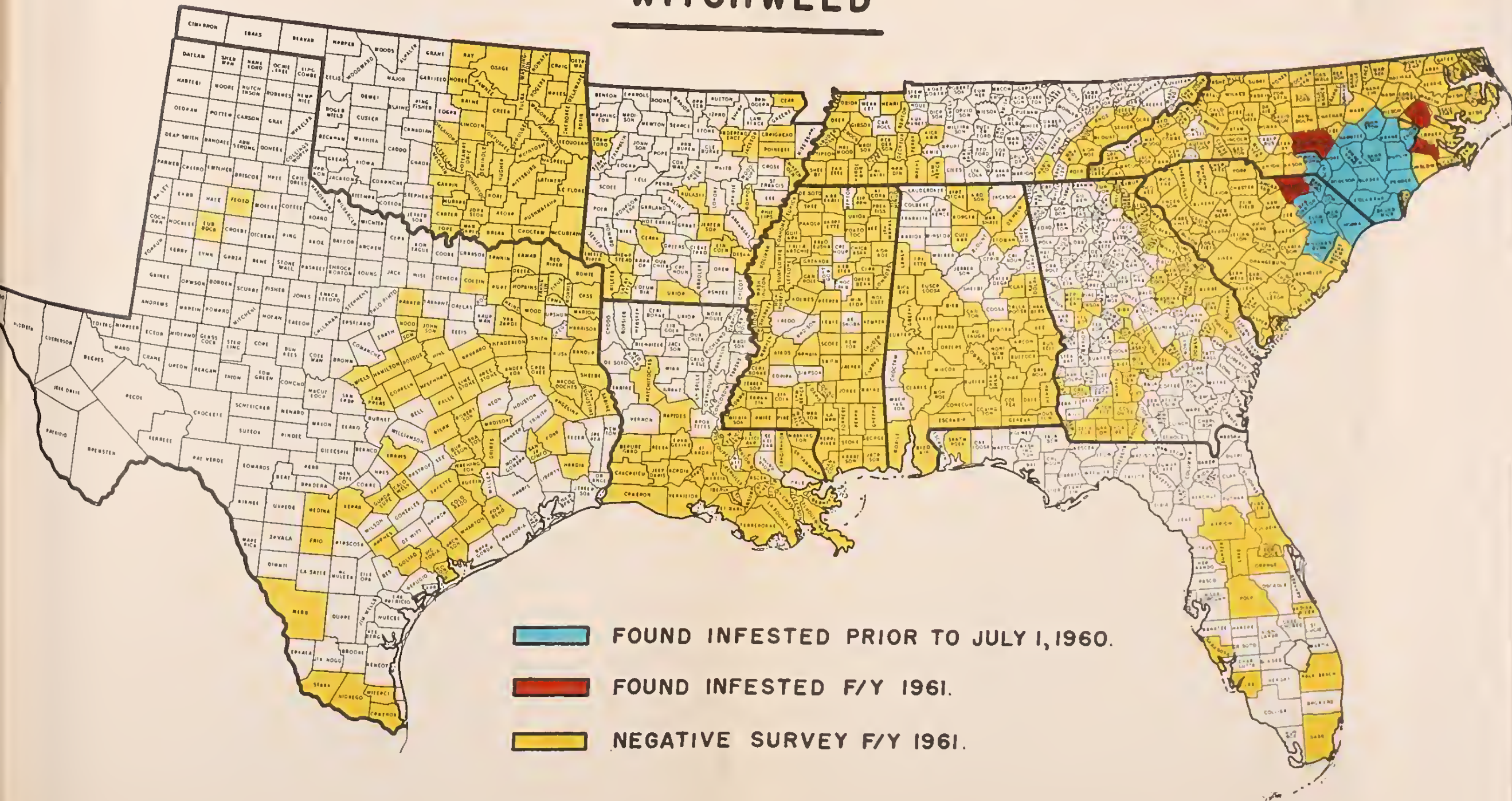
| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | Feature & News Stories | Extent These Aids Were Used | | | Infest. Maps & Posters | Special Reports |
|----------------|--------------------------|---------------------------|--------|-------|----------|------------------------|-----------------------------|------|------|------------------------|-----------------|
| | | Talks | Slides | Films | Radio TV | | Exhibits | Bul. | Cir. | | |
| Florida | 1 | 2 | 1 | | | | 1 | 58 | 91 | | |
| Georgia | | | 2 | | | | 1 | 3 | 35 | | |
| Mississippi | | | | | | | | 300 | | | |
| North Carolina | 215 | 564 | 2660 | 2 | 4 | 12 | 2 | 1478 | 475 | 351 | |
| South Carolina | 40 | 158 | 161 | | 20 | 8 | 29000 | 2375 | 2150 | 183 | 1 |
| Texas | 1 | 1 | 6 | | | | | 35 | | | |
| Total | 257 | 725 | 2830 | 2 | 24 | 20 | 29004 | 4249 | 2751 | 534 | 1 |





UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

WITCHWEED







PLANT PEST CONTROL
COOPERATIVE PROGRAMS
WESTERN REGION

FISCAL YEAR

1961

PLANT PEST CONTROL

COOPERATIVE

PROGRAMS



FISCAL YEAR

1961



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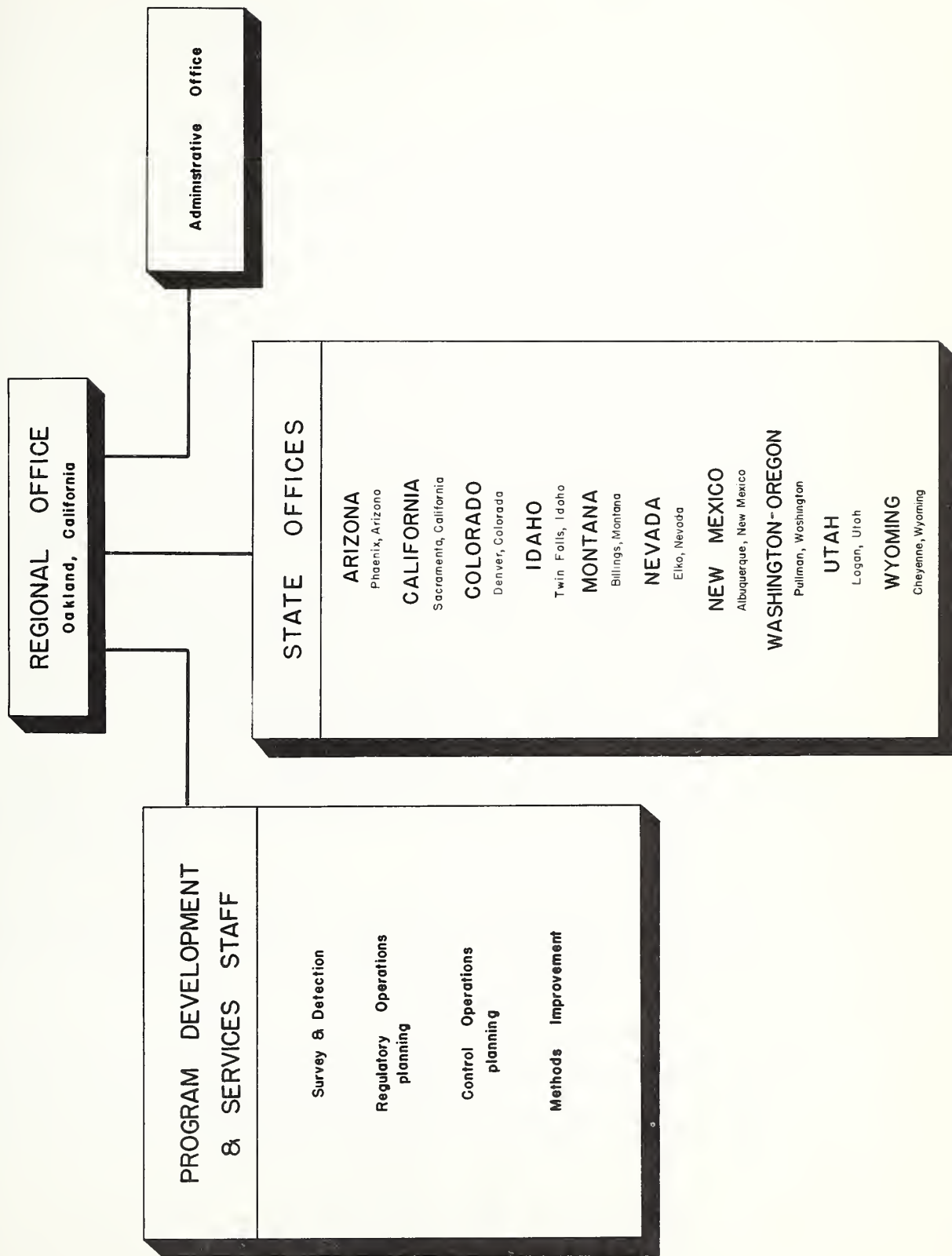
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WESTERN PLANT PEST CONTROL REGION





PLANT PEST CONTROL COOPERATIVE PROGRAMS

Elsewhere in this report, the unusual occurrences which marked fiscal year 1961 in the Western Region will be elaborated. Simple mention of them is made here so that the reader with special interest in a particular development may know of its inclusion.

The Japanese Beetle secured a foothold. A small infestation in urban Sacramento, California, is being painstakingly delimited and promptly fought with foliar and soil treatments. The cooperative eradication task is jointly financed and directed by the Division, the State of California, and the affected counties. This constitutes the third current eradication effort in the Western Region, the other two being khapra beetle and pink bollworm.

The European Pine Shoot Moth was found in the states of Washington and Oregon. At the behest of the U. S. Forest Service, fearful of establishment of this severe pest of pines in the commercial timber stands of the Northwest, the Division participated in surveys carried out to delimit occurrence in the Western Region. We also supported Uniform State Quarantine procedures evoked by several of the Western States to prevent unrestricted movement of host materials. The Division likewise lent technical assistance to its Federal and State cooperators in evolving and testing fumigation procedures to treat infested ornamental plantings.

In Grasshopper Control, exhaustive field tests of insecticides other than chlorinated hydrocarbon yielded much valuable information. This is significant in regard to residues. The very extensive "soil bank" or Conservation Reserve lands loomed more prominently as harbors of "hot" infestations. The usual adjacency to cropped lands complicated the problem in farmed areas.

Pink Bollworm Eradication gains in central Arizona continued to be gratifying. Infested and adjacent cotton requiring insecticide treatment embraced only 11,000 acres, some 15 percent of the total included in the 1959 program.

Activation of the interregional training program was accomplished. The Western Region hosted the first "Exchange" group of supervisors. It was a worthwhile experience for both tutors and students. The things we learned should be very helpful in guiding our future training activities.

When three oriental fruit flies (Dacus dorsalis) were trapped in California at points more than a hundred miles apart, the State, counties, and fruit industry shared our apprehension. Saturation trapping and full sanitary precautions apparently succeeded in eliminating the threat. Despite most diligent cooperative detection efforts, no additional flies were found.

In the instances mentioned, as well as in the discharge of the Western Region's responsibilities relating to Barberry Eradication, Mormon Cricket Control, Khapra Beetle Eradication, Plant Pest Survey, Mexican Fruit Fly Control, and Peach Mosaic Control, our close and harmonious working relationships with appropriate research groups and with the Division's Methods Improvement Operations paid dividends. Their advices and help greatly expedited the action accomplishments in the Region.

BARBERRY ERADICATION

A reappraisal of requirements for completion of the organized cooperative barberry eradication program in Colorado was made during the year. The study consisted of a review of accomplishments to date based on property records and on-sight territory analysis and epidemiological factors of stem rust control. Due to change in land use some areas were placed in low priority classification for future consideration, and others were eliminated entirely. The study indicates that some nine years will be required to complete the Colorado eradication work at the present rate of activity.

In the State of Washington, survey and eradication were continued in Adams, Lincoln, Spokane, Stevens, and Yakima Counties. Eighty square miles of territory were intensively surveyed and 33 square miles were given farmstead survey.

Montana and Wyoming are on "maintenance" and a limited amount of work was done in each State. Oregon revised its State law requiring the destruction of all rust-susceptible Berberis species.

In Colorado, stem and leaf rust appeared late in the season in 1960, and while prevalent in many fields of wheat and other grains, it developed after grain began to mature and only traces of damage could be noted.

Stem rust surveys were conducted weekly throughout the growing season in the State of Washington, but prevalence of the disease, both on barberry and grain, was negligible. Cooperation was continued with Washington State University on the stem rust overwintering studies being conducted by that institution. The stem rust slide exposure stations also were maintained at Dayton and Rosalia, Washington, as well as stations at Madras, Maupin, and Joseph, Oregon; and at Nezperce, Idaho. In addition, both Oregon and Washington State personnel operated other slide exposure stations at strategic locations.

In 1960, stripe rust, a disease mainly affecting leaf tissue, overshadowed and masked virtually all other loss factors and caused a large reduction in yield and quality in some parts of eastern Washington. This same disease again became epidemic in the early spring of 1961, and by the end of June had taken a heavy toll of susceptible wheat varieties.

Nurseries engaged in interstate shipment of Berberis were inspected in accordance with the provisions of Federal Domestic Plant Quarantine No. 38. There has been an increase in the number of nurseries in the Western Region shipping Berberis interstate. Two new species of Mahonia are being tested for the nursery trade at the Rust Laboratory, St. Paul, Minnesota, for susceptibility to stem rust.



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

SUMMARY OF ASSOCIATED ACTIVITIES

Program Barberry Eradication

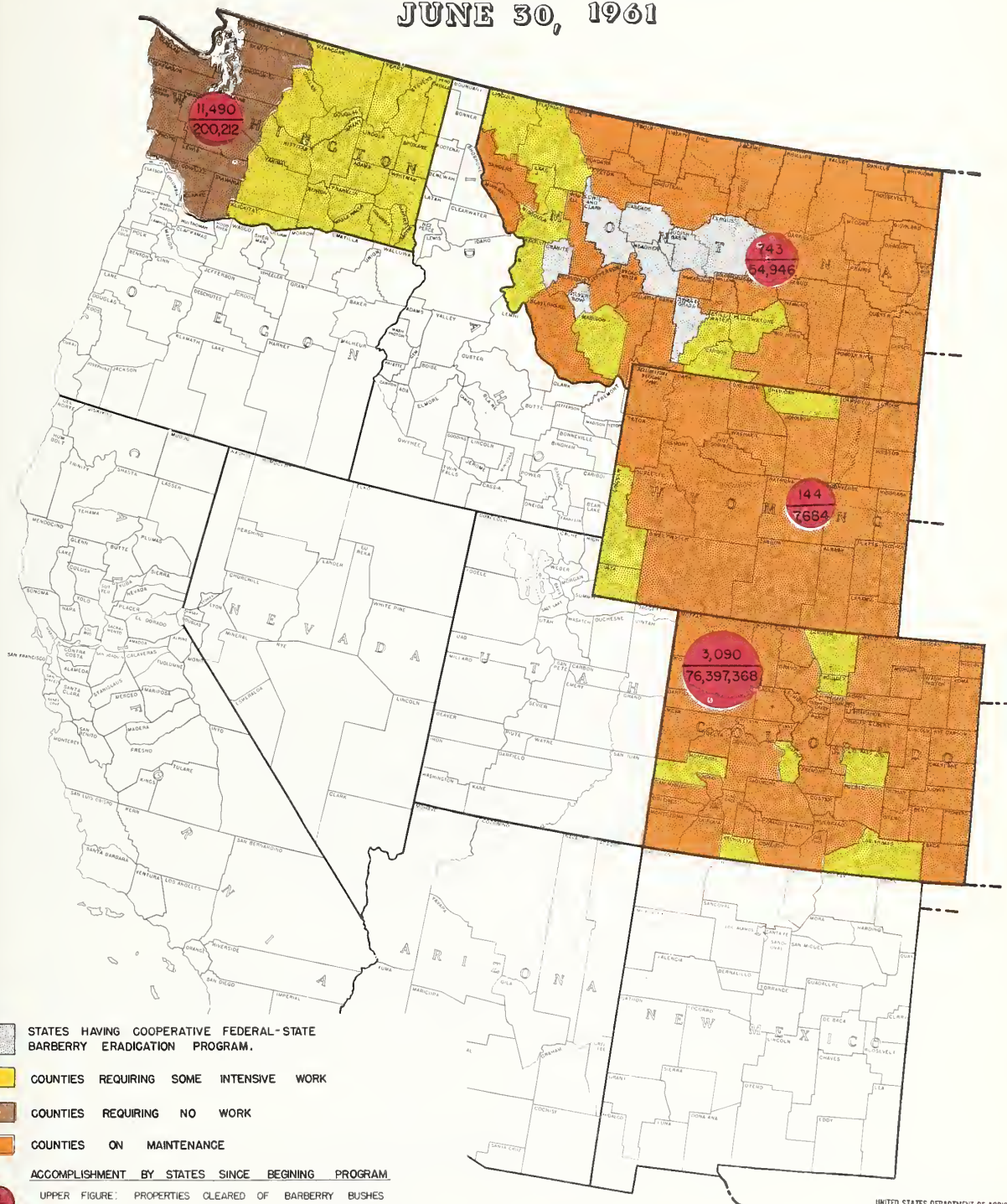
Fiscal Year 1961

| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | Special Reports | | |
|------------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|------|-------|-----------------|------------------------|---|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul* | Cir.* | | Infest. Maps & Posters | |
| Colorado | 1 | | | 2 | | | 16 | | | 320 | 20 | 5 | |
| Oregon | | | | | | | | | | | 50 | | |
| Washington | | | | | | | | | | | 100 | | 1 |
| Total | 1 | | | 2 | | | 16 | | | 470 | 20 | 6 | |

* Written by Federal personnel for release direct or through cooperators.

BARBERRY ERADICATION

JUNE 30, 1961



STATES HAVING COOPERATIVE FEDERAL-STATE BARBERRY ERADICATION PROGRAM.

COUNTIES REQUIRING SOME INTENSIVE WORK

COUNTIES REQUIRING NO WORK

COUNTIES ON MAINTENANCE

ACCOMPLISHMENT BY STATES SINCE BEGINING PROGRAM

UPPER FIGURE: PROPERTIES CLEARED OF BARBERRY BUSHES

LOWER FIGURE: BARBERRY BUSHES & SEEDLINGS DESTROYED

SUMMARY ACCOMPLISHMENTS ALL STATES WESTERN REGION

PROPERTIES CLEARED — — — — 15,469

BUSHES & SEEDLINGS DESTROYED — — 76,660,212

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION
WESTERN REGION
JUNE 30, 1961



GRASSHOPPER CONTROL

Severe infestations of grasshoppers developed in drouth-stricken areas of the Region, approaching disaster proportions in Montana and Washington during the final two months of the fiscal year. Both rangeland and crops were involved. Several million acres of rangeland and very extensive crop areas were economically infested, and resultant damage was high. Spring nymphal surveys showed a considerable increase in the populations over expectations. This was a result of several natural factors which favored the development of infestations to almost their full potential. Control on these 1961 season build-up areas did not get well under way by the end of June. Only 27,000 acres were treated cooperatively during the fiscal year in the Region. The map accompanying this report shows this acreage together with the additional work accomplished during the remainder of the 1961 season, the total being nearly a half-million acres.

In addition to the cooperative work referred to above, voluntary control work amounting to approximately 21,000 acres on private range and on roadsides in Colorado and Utah was reported. A large amount of voluntary grasshopper control work was done by individuals in Montana during the fiscal year, but the total treated, largely with chlorinated hydrocarbons, was not officially reported.

It is probable that additional cooperative work would have been done in several states of the Region, notably Montana, Washington, Oregon, and New Mexico, where range livestock management problems associated with implied restrictions in the use of chlorinated hydrocarbons undoubtedly limited the amount.

In our 1960 fiscal year report we briefly discussed Conservation Reserve lands and their influence on rangeland grasshopper infestations. Further observations in these areas continue to suggest that in nearly all instances these lands do serve as reservoirs of infestations seriously and especially menacing adjacent croplands. These lands have created serious control problems in parts of Utah, Idaho, Washington, Montana, and New Mexico. In some cases, where good grass has replaced weedy vegetation on Conservation Reserve lands, the grasshopper infestations have correspondingly decreased.

Contrary to the situation a year ago, there are serious threats of severe infestations of grasshoppers occurring next field season in several states of the Region. Montana harbors the greatest possibility of having widespread difficulties. Lesser acreages of severe infestation threaten in Utah, Washington, Idaho, Oregon, and New Mexico.

The insecticide Sevin was used in several sensitive areas during the 1961 season and results were quite satisfactory, although there was observable lack of consistency under the varying conditions where tried.

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

SUMMARY OF ASSOCIATED ACTIVITIES

Program Grasshopper Control

Fiscal Year 1961

| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | Special Reports |
|---------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|-------|-------|-----------------|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul.* | Cir.* | |
| Arizona | | | | | | | | | | 17 | |
| Calif. | 3 | 3 | | 3 | | | 3 | | 100 | 100 | |
| Colo. | 6 | 3 | | | | | 2 | 25 | 10 | 50 | 60 |
| Idaho | 1 | | | | | | | | | | |
| Montana | 15 | | | | | | | | | | |
| Nevada | 3 | 1 | | | | | 2 | 3 | | 25 | 3 |
| Oregon | 2 | | | | | | | 12 | | 36 | |
| Utah | 16 | 14 | 29 | 12 | 5 | | 21 | 252 | 1140 | 60 | 10 |
| Wash. | 3 | | | | | | | 25 | | 24 | |
| Wyo. | 6 | 6 | | 1 | 1 | | | 16 | | 55 | |
| Total | 55 | 27 | 29 | 16 | 6 | | 28 | 333 | 1250 | 367 | 73 |

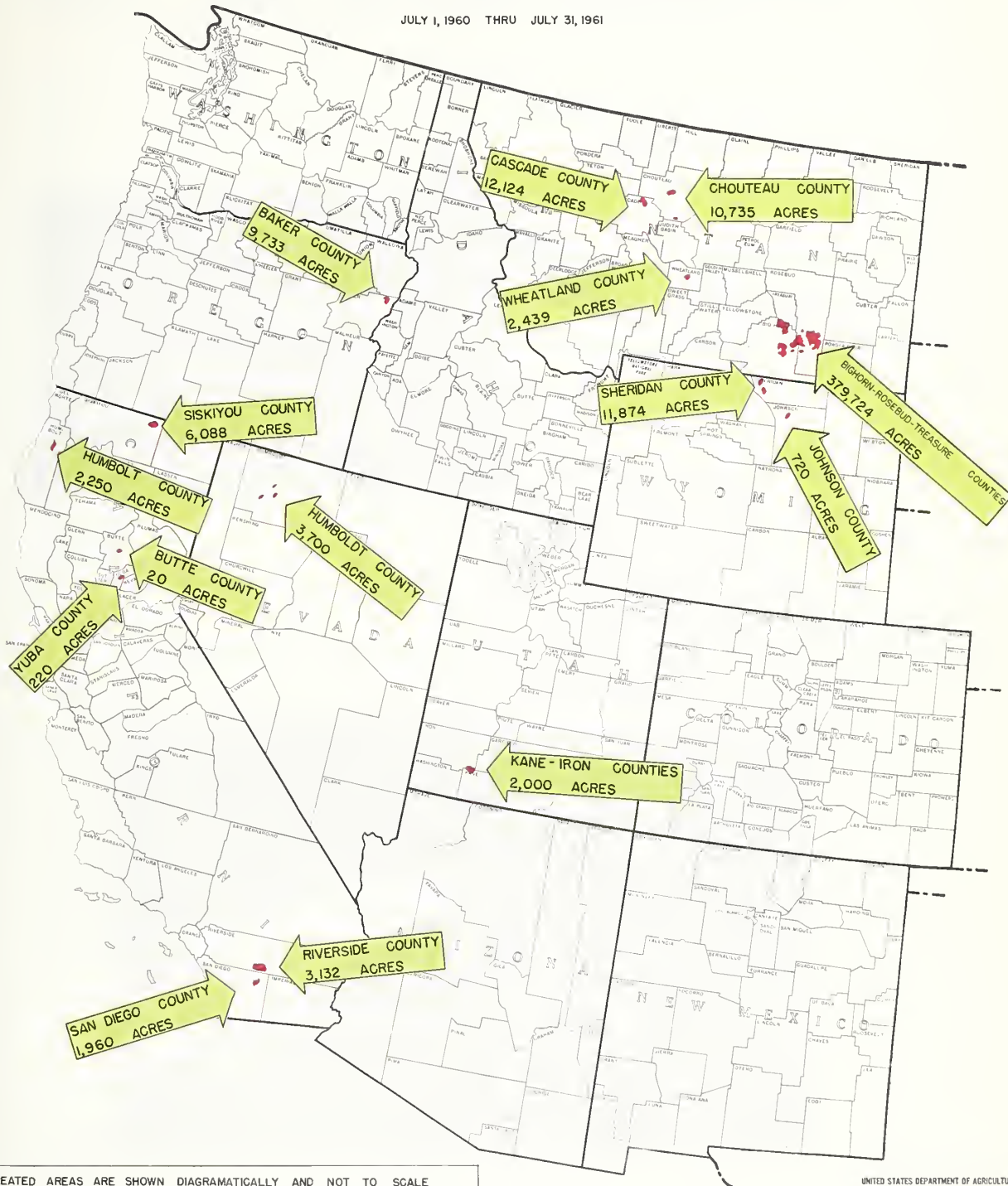
* Written by Federal personnel for release direct or through cooperators.



GRASSHOPPER CONTROL — RANGELAND

LOCATION AND SIZE OF AREAS COOPERATIVELY TREATED

JULY 1, 1960 THRU JULY 31, 1961



TREATED AREAS ARE SHOWN DIAGRAMMATICALLY AND NOT TO SCALE
BECAUSE OF SMALL NUMBER OF ACRES INVOLVED IN SOME COUNTIES.
ACTUAL TREATED ACREAGES ARE SHOWN ON LEGENDS.

TOTAL ACRES TREATED — 446,719

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION
WESTERN REGION

JULY 1961



with the drouth came the GRASSHOPPERS —
farmers' oldest and most damaging pest.



Reminding us that the
time is not yet here
when we can feel free
of their ravages.



Controls were applied--Results
good, but areas treated were
small compared to the total
acreages infested.

Grasshopper Control

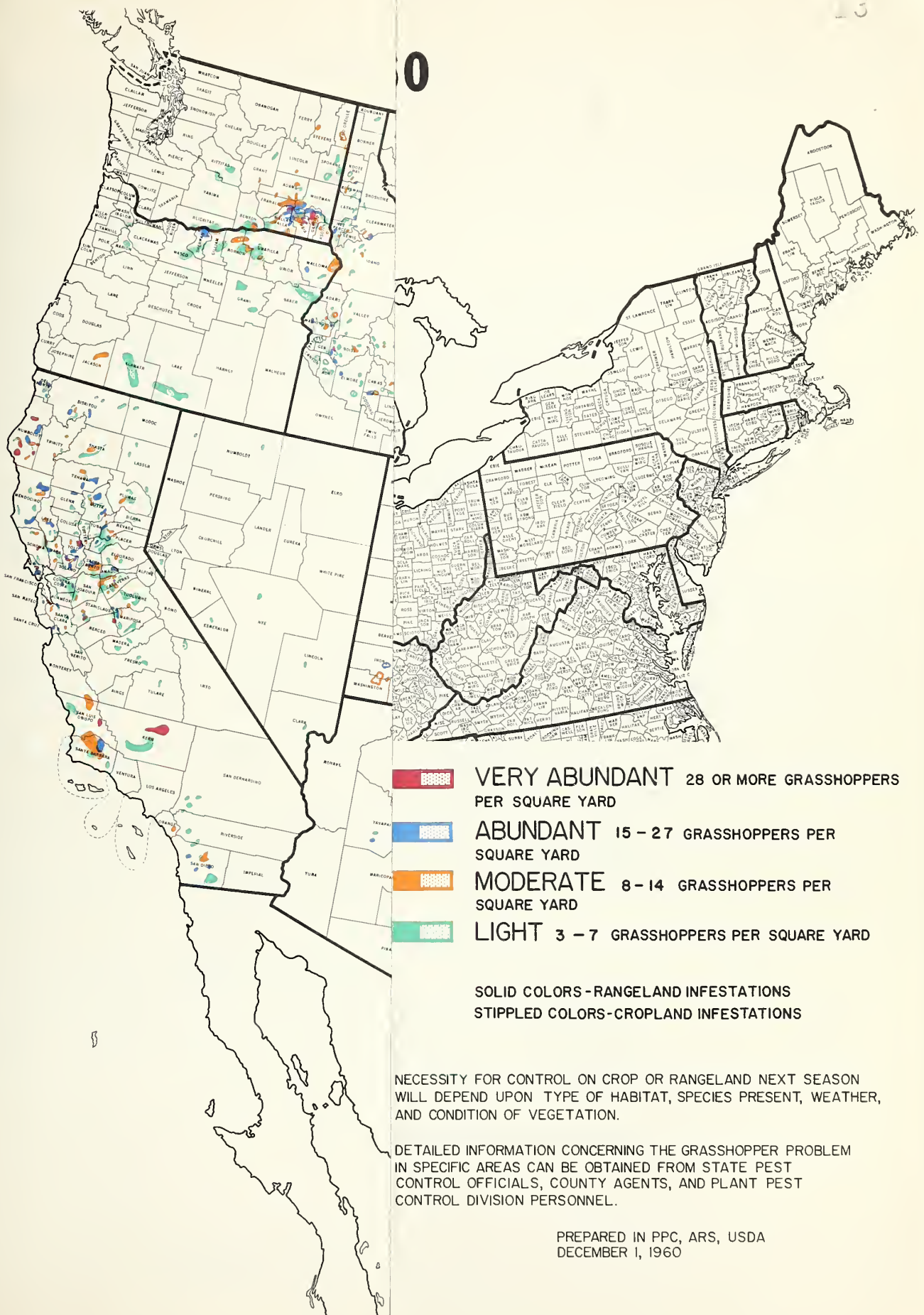
WORK REPORT

1960 ADULT GRASSHOPPER SURVEY

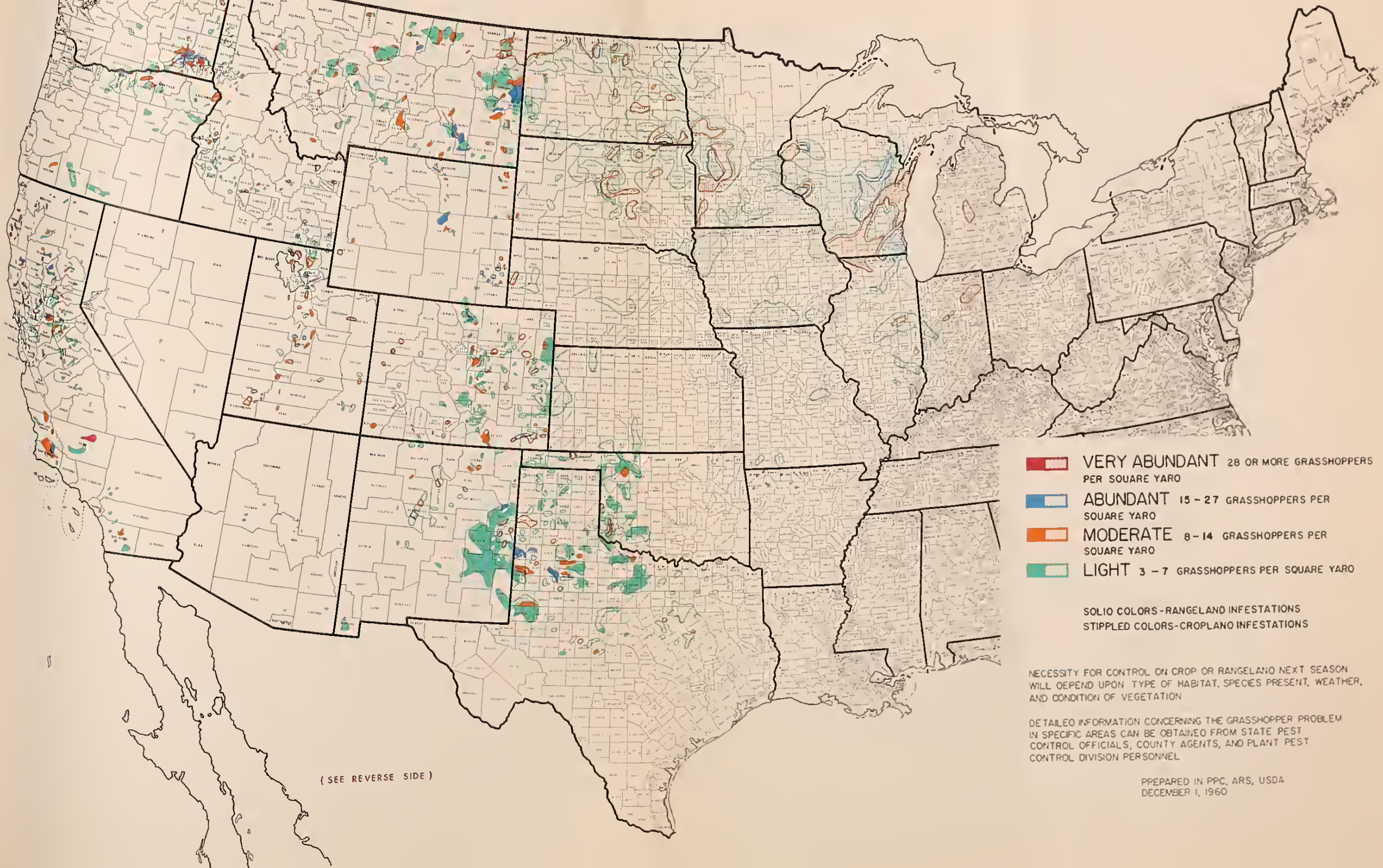
Fiscal Year 1961

| State | No. of Counties Surveyed | Total No. of Stops | Miles Traveled on Survey | No. of Men | | Man Days | | Time Period | | Cost | |
|------------|--------------------------|--------------------|--------------------------|------------|-------------|----------|-------------|-------------|---------|--------|-------------|
| | | | | PPCD | State & Co. | PPCD | State & Co. | Start | Stop | PPCD | State & Co. |
| Arizona | 13 | 308 | 6,653 | 6 | 0 | 38½ | 0 | 7/5/60 | 9/26/60 | \$ 375 | \$ 0 |
| California | 57 | 668 | 19,115 | 0 | 41 | 105 | 72 | 5/27/60 | 8/29/60 | 1,661 | 1,182 |
| Colorado | 50 | 460 | 17,744 | 8 | 2 | 61 | 10 | 7/22/60 | 8/24/60 | 764 | 285 |
| Idaho | 44 | 516 | 14,945 | 6 | 0 | 90 | 0 | 7/18/60 | 9/1/60 | 1,475 | 0 |
| Montana | 54 | 654 | 17,386 | 7 | 0 | 139 | 0 | 8/4/60 | 9/2/60 | 2,813 | 0 |
| Nevada | 17 | 194 | 12,360 | 3 | 1 | 62 | 30 | 7/4/60 | 8/31/60 | 1,782 | 760 |
| New Mexico | 31 | 283 | 16,287 | 6 | 1 | 62 | 17 | 6/13/60 | 9/14/60 | 465 | 170 |
| Oregon | 21 | 120 | 6,159 | 3 | 0 | 37 | 0 | 8/1/60 | 8/18/60 | 490 | 0 |
| Utah | 28 | 233 | 9,590 | 4 | 1 | 58 | 1 | 8/8/60 | 8/24/60 | 557 | 0 |
| Washington | 20 | 135 | 6,488 | 3 | 0 | 43 | 0 | 8/1/60 | 8/24/60 | 328 | 0 |
| Wyoming | 22 | 211 | 9,080 | 2 | 1 | 30 | 6 | 8/8/60 | 8/26/60 | 251 | 60 |
| Total | 357 | 3,782 | 135,807 | 48 | 47 | 725½ | 136 | | | 10,961 | \$2,457 |

0



GRASSHOPPER ADULT SURVEY - FALL 1960



- VERY ABUNDANT** 28 OR MORE GRASSHOPPERS PER SQUARE YARD
- ABUNDANT** 15 - 27 GRASSHOPPERS PER SQUARE YARD
- MODERATE** 8 - 14 GRASSHOPPERS PER SQUARE YARD
- LIGHT** 3 - 7 GRASSHOPPERS PER SQUARE YARD

SOLID COLORS - RANGELAND INFESTATIONS
STIPPLED COLORS - CROPLAND INFESTATIONS

NECESSITY FOR CONTROL ON CROP OR RANGELAND NEXT SEASON WILL DEPEND UPON TYPE OF HABITAT, SPECIES PRESENT, WEATHER, AND CONDITION OF VEGETATION

DETAILED INFORMATION CONCERNING THE GRASSHOPPER PROBLEM IN SPECIFIC AREAS CAN BE OBTAINED FROM STATE PEST CONTROL OFFICIALS, COUNTY AGENTS, AND PLANT PEST CONTROL DIVISION PERSONNEL

PREPARED IN PPC, ARS, USDA
DECEMBER 1, 1960

MENT OF AGRICULTURE

SEARCH SERVICE
TROL DIVISION

during the late summer and fall of 1960. The survey reveals where and how many grass-
al surveys, made in the spring, determine population densities, and indicate those areas
ly higher than that which was indicated in 1959. Control on those lands will be handled
ange areas, shown on the map in solid colors (orange, blue and red only), total 4,467,720
hin these areas, infestations may be solid or spotted.

NS—ACREAGE BY REGIONS, FALL 1960

e — Orange, Blue and Red)

| REGION
AND
STATE | LANDOWNERSHIP—ACRES | | TOTAL
ACRES |
|------------------------|---------------------|---------------|----------------|
| | PRIVATE AND STATE | PUBLIC DOMAIN | |
| Montana | 1,086,500 | 240,500 | 1,327,000 |
| New Mexico | 140,600 | — | 140,600 |
| Oregon | 130,100 | 101,000 | 231,100 |
| Utah | 129,380 | 23,920 | 153,300 |
| Washington | 454,740 | — | 454,740 |
| Wyoming | 139,700 | 8,000 | 147,700 |
| SOUTHERN | | | |
| Oklahoma | 10,000 | — | 10,000 |
| Texas | 353,700 | — | 353,700 |

search Service, in cooperation with various State agencies concerned.

KHAPRA BEETLE ERADICATION

Inspections for the khapra beetle were continued intensively in the 11 Western States during the fiscal year 1961, as evidenced by the 38,025 property inspections made. In the Western Region, this pest has not been found beyond the borders of the States of Arizona, California, and New Mexico, where it was originally found in 1953 and 1954. Eradication of the khapra beetle will require continuing unabated detection effort.

Infestations continue to be found in Arizona and California, but at less frequent intervals. During the fiscal year there were 20 infestations found in Arizona, and seven were found in California. From the beginning of the program there have been 260 infestations found in Arizona, 345 in California, and 19 in New Mexico, making a total of 624 infestations found to date. At the close of the fiscal year there remained to be fumigated one property in Arizona and three in California. These are in the process of being treated.

Progressively each year more and more inspections are required to find a khapra beetle infestation, as indicated by the following data. The table below shows by states and years the number of inspections made to reveal an infestation.

| | <u>1955</u> | <u>1956</u> | <u>1957</u> | <u>1958</u> | <u>1959</u> | <u>1960</u> | <u>1961</u> |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Arizona | 37 | 85 | 99 | 189 | 516 | 458 | 666 |
| California | 129 | 331 | 578 | 335 | 1930 | 3229 | 2743 |
| New Mexico | 324 | 1667 | 2163 | 3500* | 209 | 3600* | 3540* |

*There were no infestations found in New Mexico during the years 1958, 1960, and 1961.

Regulatory procedures set forth in Federal Domestic Plant Quarantine No. 76 were adhered to in infested areas throughout the year. Regulatory requirements, sanitation measures, and related problems were successfully worked out with state regulatory officials, commercial establishments, and other property owners.

Arrangements have been completed through Tribal Councils for the inspection of grain storages on the Navajo and Hopi Indian Reservations. To accomplish this it was necessary to employ Navajo and Hopi college students to assist with the inspections and act as interpreters and guides. These reservations lie in parts of Arizona, Utah, and New Mexico.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

TO COOPERATORS

This map is based upon the results of cooperative grasshopper adult surveys made during the late summer and fall of 1960. The survey reveals where and how many grasshoppers infest an area, and indicates the potential severity of infestations for 1961. Nymphal surveys, made in the spring, determine population densities, and indicate those areas where control may be necessary in 1961.

The infestations on croplands, shown on the map in stippling, in general are slightly higher than that which was indicated in 1959. Control on those lands will be handled by the farmers with technical assistance from Division and State personnel. The infested range areas, shown on the map in solid colors (orange, blue and red only), total 4,467,720 acres in 14 Western and Midwestern States. Shaded areas on the map are diagrammatic. Within these areas, infestations may be solid or spotted.

RANGELAND GRASSHOPPER INFESTATIONS—ACREAGE BY REGIONS, FALL 1960

(Moderate Populations or Above — Orange, Blue and Red)

| REGION
AND
STATE | LANDOWNERSHIP—ACRES | | TOTAL
ACRES | | REGION
AND
STATE | LANDOWNERSHIP—ACRES | | TOTAL
ACRES |
|------------------------|---------------------|---------------|----------------|--|------------------------|---------------------|---------------|----------------|
| | PRIVATE AND STATE | PUBLIC DOMAIN | | | | PRIVATE AND STATE | PUBLIC DOMAIN | |
| CENTRAL | | | | | | | | |
| No. Dakota | 21,740 | 12,140 | 33,880 | | Montana | 1,086,500 | 240,500 | 1,327,000 |
| So. Dakota | 19,600 | 1,000 | 20,600 | | New Mexico | 140,600 | — | 140,600 |
| | | | | | Oregon | 130,100 | 101,000 | 231,100 |
| | | | | | Utah | 129,380 | 23,920 | 153,300 |
| | | | | | Washington | 454,740 | — | 454,740 |
| | | | | | Wyoming | 139,700 | 8,000 | 147,700 |
| WESTERN | | | | | SOUTHERN | | | |
| Arizona | 2,500 | — | 2,500 | | Oklahoma | 10,000 | — | 10,000 |
| California | 824,740 | 58,060 | 882,800 | | Texas | 353,700 | — | 353,700 |
| Colorado | 597,300 | 21,600 | 618,900 | | | | | |
| Idaho | 37,700 | 53,200 | 90,900 | | | | | |

The survey was planned and performed by the Plant Pest Control Division, Agricultural Research Service, in cooperation with various State agencies concerned.

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problems in connection with KHAPRA BEETLE fumigations are many.



TEMPORARY MOVEMENT OF FAMILY FROM ITS HOME IS OFTEN NECESSARY WHERE RESIDENCE HAS BEEN USED FOR STORAGE OF INFESTED HOST MATERIALS OR WHEN HOME IS LOCATED CLOSE TO A UNIT UNDER FUMIGATION TO PROTECT OCCUPANTS FROM EXPOSURE TO LOW CONCENTRATION OF ESCAPING METHYL BROMIDE.

WINDS ARE COSTLY, DESTRUCTIVE, AND CAUSE MORE TROUBLE AND DELAYS THAN ANY OTHER ONE FACTOR.



TRASH USUALLY ASSOCIATED WITH FARM PROPERTIES REQUIRES FUMIGATION. SUCH PILES CONSIST OF CONTAINERS, SCRAP, OLD EQUIPMENT, OR HOST MATERIALS THAT HAVE BEEN USED OR EXPOSED TO KHAPRA BEETLE INFESTATIONS.



STOCK PILING 340 TONS OF PRE-MIXED FEED TO BE USED IN MAINTAINING 4,000 HEAD OF CATTLE FOR A 6-DAY PERIOD WHILE FEED MILL IS UNDER TARP.



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UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

SUMMARY OF ASSOCIATED ACTIVITIES

Program Khapra Beetle Eradication

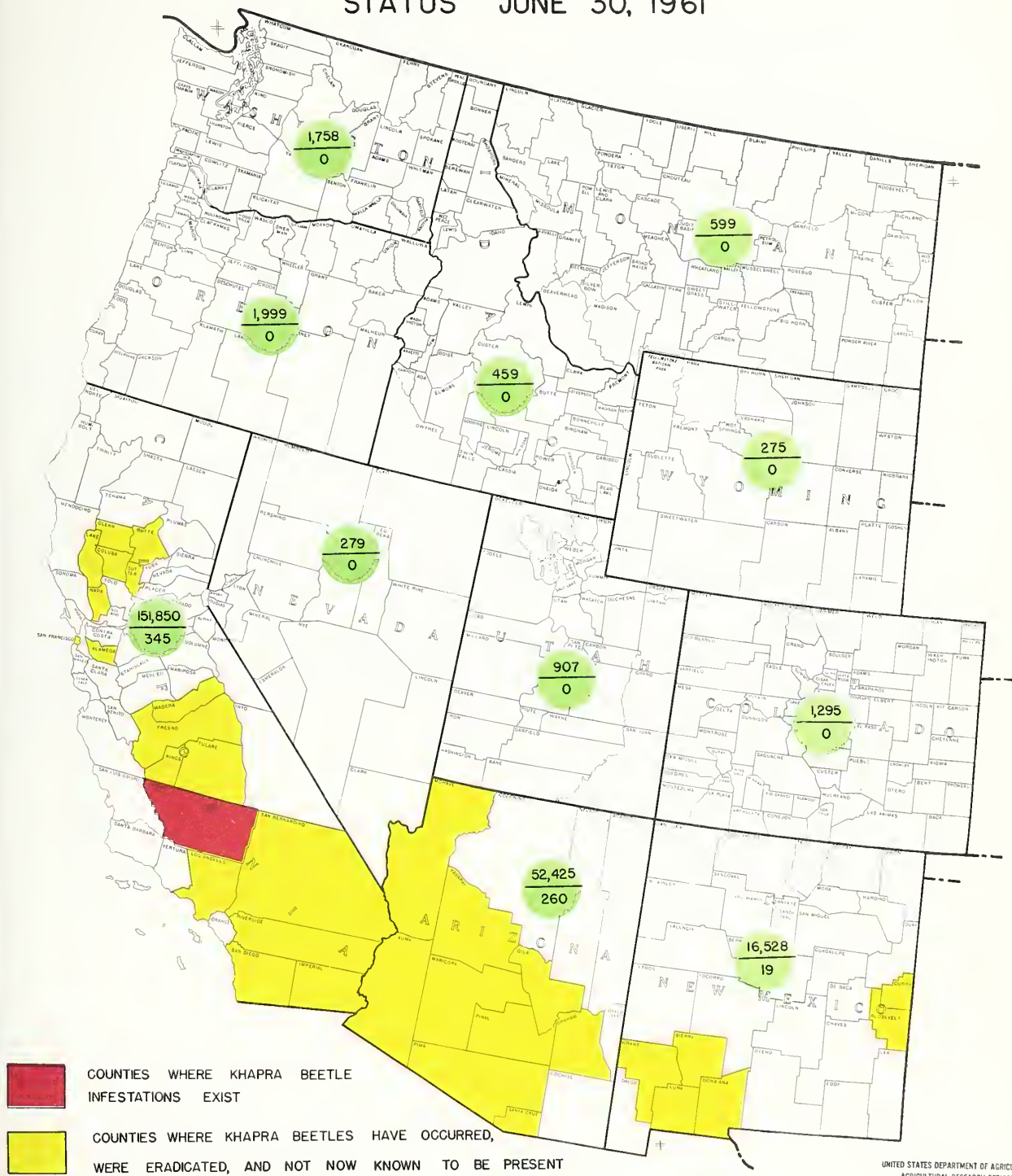
Fiscal Year 1961




| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | Special Reports | |
|---------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|-------|-------|-----------------|------------------------|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul.* | Cir.* | | Infest. Maps & Posters |
| Arizona | 2 | 2 | 3 | | | | 2 | | | 3900 | | |
| Calif. | 2 | 2 | 1 | 3 | 1 | 1 | 2 | 2 | 500 | 500 | | 1 |
| Idaho | 3 | 3 | 3 | 3 | | | | | | | | |
| Nevada | | | | | | | | | 20 | | 3 | 1 |
| Oregon | | | | | | | | | 200 | | | |
| Utah | 5 | 8 | 15 | | | | 6 | | | 350 | | 4 |
| Wash. | | | | | | | | 1 | 450 | | | |
| Wyo. | | 1 | 1 | | | | | | 85 | | 6 | |
| Total | 12 | 16 | 23 | 6 | 1 | 1 | 10 | 3 | 1255 | 4750 | 9 | 6 |

* Written by Federal personnel for release direct or through cooperators.

KHAPRA BEETLE ERADICATION

STATUS JUNE 30, 1961



-  COUNTIES WHERE KHAPRA BEETLE INFESTATIONS EXIST
-  COUNTIES WHERE KHAPRA BEETLES HAVE OCCURRED, WERE ERADICATED, AND NOT NOW KNOWN TO BE PRESENT
-  UPPER FIGURE: TOTAL INITIAL AND REPEAT INSPECTIONS
LOWER FIGURE: TOTAL INFESTED PROPERTIES FOUND

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION
WESTERN REGION
JUNE 30, 1961

MEXICAN FRUIT FLY CONTROL

Arizona and California, because of their proximity to the fruit fly infested area in Mexico, are vulnerable to infestation from Mexico by this native fruit pest. Survey, detection, and control activities are therefore carried on for the purpose of early detection and the prompt eradication of any incipient infestation that might become established.

The program activities include trap operation and field inspection of host fruit in the two state areas. Bait insecticide sprays, however, are applied to host trees in Southern California to attract and kill any flies that might be in the area.

In Arizona, traps are run in Santa Cruz and Yuma Counties during the spring and fall months.

As a consequence of the extensive and important fruit industry in California, the trapping program is considerably larger in that state. Approximately 2,000 traps are operated throughout the year in San Diego County.

As an added precaution against the establishment of a larval infestation, a cooperative spray program is conducted in southern San Diego County, California, throughout the spring, summer, and fall months. The actual application of the sprays is a responsibility of the State Department of Agriculture. The Division, however, participates in this important phase of the program by furnishing the insecticides.

As infested fruit continues to be intercepted and fruit flies trapped in the border cities of Mexico, the need for continuing the program to prevent the establishment of the Mexican fruit fly in the Western United States is evident.



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

SUMMARY OF ASSOCIATED ACTIVITIES

Program Mexican Fruit Fly Control

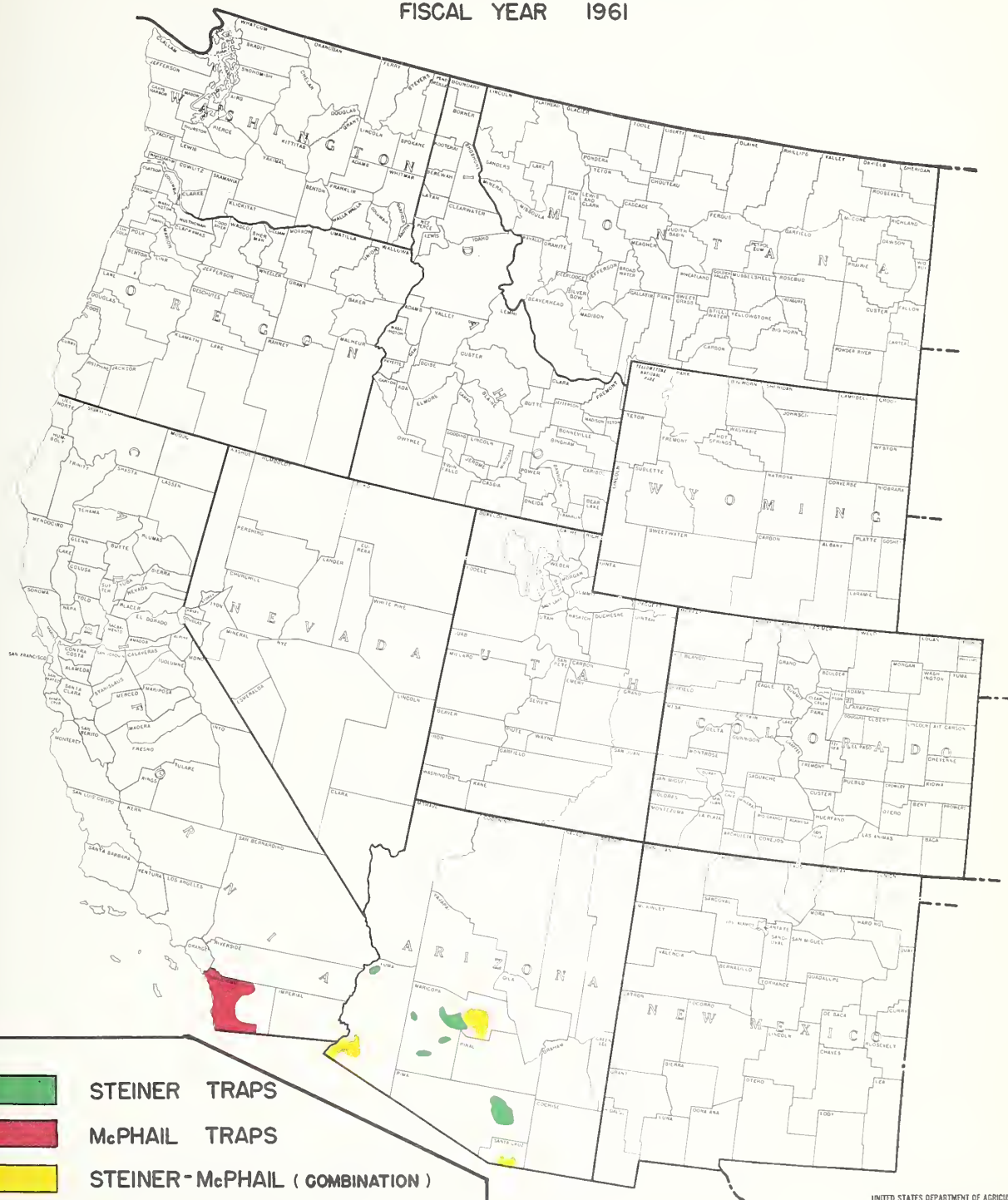
Fiscal Year 1961

| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | Special Reports |
|--------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|------|-------|-----------------|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul* | Cir.* | |
| Calif. | 1 | 1 | 1 | | | | | | | 200 | |
| Total | 1 | 1 | 1 | | | | | | | 200 | |

* Written by Federal personnel for release direct or through cooperators.

COOPERATIVE FRUIT FLY DETECTION

FISCAL YEAR 1961



IN ADDITION, LURE, BAIT and numerous TRAPS are furnished by PPC for use in many CALIFORNIA COUNTIES.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION
WESTERN REGION
OAKLAND, CALIF.
AUGUST 17, 1961



MORMON CRICKET CONTROL

In most cases Mormon cricket infestations were light and scattered and apparently posed no immediate threat to crop or range lands. Control work done during the year was limited to small areas in Wyoming and Utah. The Wyoming infestation was on private land in western Sublette County and was baited in July 1960. Bait for the 2,665 acres treated was furnished by the State and Federal cooperators, while aerial application charges were paid by the ranchers.

In Utah in May 1961 a small band of crickets migrated into fields near Kanosh, Millard County, where they destroyed 12 acres of fall-planted wheat. Under Division technical direction, the farmers sprayed the crop and adjacent margins with dieldrin, the insecticide chosen by them, and excellent control of the insects resulted.

In all states of the Region where Mormon crickets have created problems in the past, the supervisors have kept known trouble spots under surveillance, and have instituted control when build-ups appeared to be imminent. We believe that this practice of prompt suppression of potential "hot spot" infestations has been an important factor in the prevention of large-scale outbreaks during recent years.

The fall 1960 Mormon cricket adult survey map indicated light occurrences. The 1961 Mormon cricket adult survey map shows at least two large areas, one each in Montana and Utah totalling approximately 55,000 acres that may require cooperative control in 1962.

MORMON CRICKET ADULT SURVEY — FALL 1960



UNITED STATES DEPARTMENT OF AGRICULTURE
 AGRICULTURAL RESEARCH SERVICE
 PLANT PEST CONTROL DIVISION
 WESTERN REGION
 Oakland, California
 October 1960



MORMON CRICKET CONTROL — RANGELAND

LOCATION & SIZE OF AREAS COOPERATIVELY TREATED

FISCAL YEAR 1961



TREATED AREAS ARE SHOWN DIAGRAMMATICALLY AND NOT TO SCALE
BECAUSE OF SMALL NUMBER OF ACRES INVOLVED IN SOME COUNTIES.
ACTUAL TREATED ACRES ARE SHOWN ON LEGENDS.

TOTAL ACRES TREATED — 2,665

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION
WESTERN REGION
AUGUST 1961

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

SUMMARY OF ASSOCIATED ACTIVITIES

Program Mormon Cricket Control

Fiscal Year 1961

| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | Special Reports |
|--------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|-------|-------|-----------------|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul.* | Cir.* | |
| Colo. | 1 | | | | | | | 5 | 10 | 20 | 10 |
| Nevada | 1 | 1 | | | | | 1 | 5 | | 25 | 4 |
| Oregon | 2 | | | | | | | | | 12 | |
| Utah | 6 | 8 | 4 | | 1 | | 5 | | 180 | | 2 |
| Wash. | | | | | | | | | | 6 | |
| Wyo. | 2 | 2 | | | | | | 25 | | 55 | |
| Total | 12 | 11 | 4 | | 1 | | 6 | 35 | 190 | 118 | 16 |

*Written by Federal personnel for release direct or through cooperators.



MORMON CRICKET ADULT SURVEY — FALL 1961



UNITED STATES DEPARTMENT OF AGRICULTURE
 AGRICULTURAL RESEARCH SERVICE
 PLANT PEST CONTROL DIVISION
 WESTERN REGION
 OAKLAND, CALIF
 AUGUST 16, 1961

PEACH MOSAIC DISEASE CONTROL

Peach mosaic incidence is down for the third consecutive year. Early inspections in 1961 indicated a possible increase in the disease over the past two years. This did not materialize. An unusually mild winter in Southern California resulted in delayed foliation, and some peach trees did not leaf out. Poor foliage in Southern California and a hot June in the peach area of Colorado did not present optimum inspection conditions. Washington County, Utah, was again found to be infected with peach mosaic after 15 years of apparent freedom of the disease. This cooperative program was supported by the growers, the States, and the counties in the control areas; however, a few individuals offered resistance to having their orchards inspected and diseased trees removed, but not to the point of requiring court action.

Inspections were made of nurseries and their environs and of budwood sources and their environs. All met the requirements of the States' Uniform Peach Mosaic Quarantine.

Again this year a survey for the vector of peach mosaic, Eriophyes insidious (Keifer and Wilson), was conducted cooperatively in certain peach-growing areas of California. The vector was found in San Luis Obispo County by personnel of Entomology Research Division, ARS, and in San Diego County by cooperative program personnel.

A peach mosaic symptom survey was made north of the Tehachapi Mountains in California and in Utah County, Utah, with negative results. In the control areas, inspections were made in Los Angeles, Riverside, San Bernardino, and San Diego Counties, California; Delta, Mesa, and Montrose Counties, Colorado; and in Grand County, Utah. Peach mosaic was found in Riverside, San Bernardino, and San Diego Counties, California; Mesa and Montrose Counties, Colorado; and Grand and Washington Counties, Utah.

Entomology Research Division, ARS, conducted a vector control demonstration on some 1,600 host trees in the Lytle Creek area of San Bernardino County, California. In this demonstration the insecticide used was Diazinon, which in experimental work had been among the more effective materials, and it is registered for use on peaches. The sprayers used were 500-gallon and 300-gallon standard high-pressure units equipped with hose and orchard guns.

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

SUMMARY OF ASSOCIATED ACTIVITIES

Program Peach Mosaic Control

Fiscal Year 1961

| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | Special Reports |
|------------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|-------|-------|-----------------|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul.* | Cir.* | |
| California | 1 | 1 | 1 | | | | | 50 | | | 1 |
| Colorado | 6 | 3 | 2 | 1 | | | 6 | 25 | 200 | 2 | 90 |
| Utah | 4 | 7 | 6 | | | | 5 | | 200 | | 4 |
| Total | 11 | 11 | 9 | 1 | | | 11 | 75 | 400 | 2 | 95 |

* Written by Federal personnel for release direct or through cooperators.

PEACH MOSAIC, a virus disease, has been responsible for the loss of millions of dollars to the peach industry of this country.

The discovery of the vector (Eriophyes insidiosus) in 1955 was encouraging---lending hope that elimination of the disease through control of the mite could be achieved.

(Mite-damaged bud, left; healthy bud, right)

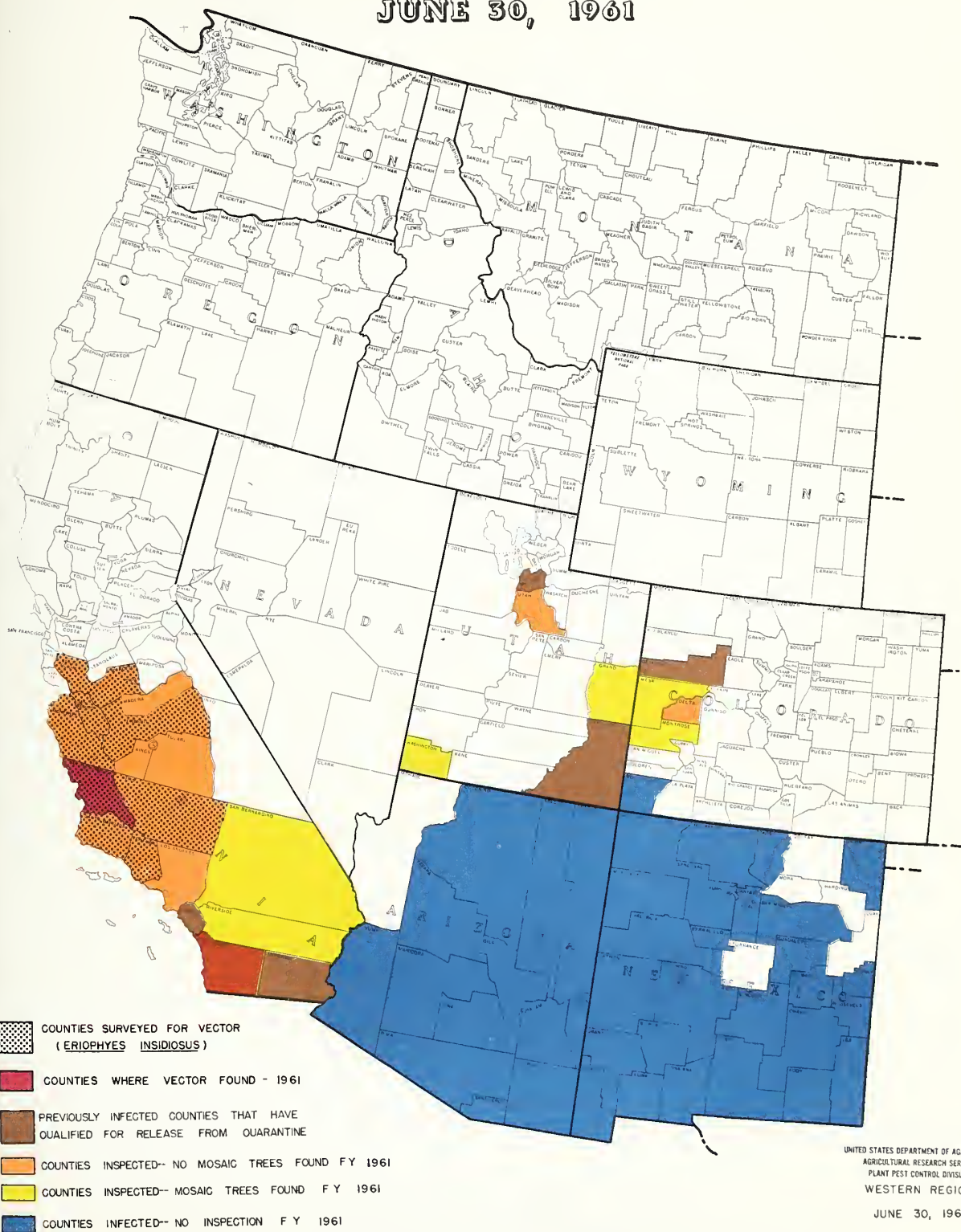


Peach bud covered with the vector. (Greatly magnified)



PEACH MOSAIC DISEASE CONTROL

JUNE 30, 1961



PINK BOLLWORM CONTROL

Planted cotton acreage in the Western Region remained essentially the same as during recent years--approximately 900,000 acres in California, 400,000 in Arizona, 190,000 in New Mexico, and 3,000 in Nevada.

Cotton-growing areas of California and Nevada, and of Yuma and Mohave Counties, Arizona, are not as yet known to be infested. One pink bollworm moth was trapped again this year in Yuma County, Arizona, but it was not substantiated by a field find. New Mexico is within the generally infested area, and the regulated area of Arizona is within the pink bollworm eradication area. Pink bollworm populations in the Rio Grande River Valley of New Mexico receded during the 1960 crop season, but continued to rise slowly in eastern Arizona. Recent reports indicate a sharp rise in Graham County, Arizona, this growing season. Control work, principally cultural, was voluntarily conducted in New Mexico, while in eastern Arizona cultural control practices were performed as a requirement of State regulation.

Survey activities in Yuma and Mohave Counties, Arizona, and in California and Baja California, stepped up a year ago because of a moth catch at San Luis, Arizona, were continued this year at the increased rate. Black light or argon light traps were operated as follows: Arizona, 150; California, 139; Nevada, 7. In Arizona, two moths were caught in late summer 1960 and only one during the spring of 1961. Eighteen gin trash machines were operated in Arizona, eight in California and one in Nevada. Survey activities in bloom, boll, and lint cleaner inspections were continued in the Region at last year's rate, except for a sharp reduction in bloom inspection in Arizona.

The 1960 season central Arizona insecticide program was completed in late July of this fiscal year. That program involved 9 applications on 32,000 acres for a cumulative total of 283,000 acres.

The 1960 cotton crop surveys revealed 2,921 acres infested in the Arizona eradication area. Determination of fields to be treated was made as follows: (1) The infested field plus all adjacent fields were treated when only one or two worms were found via lint cleaner or gin trash examination and no further field confirmation was made, and (2) all cotton fields within a one-mile radius were treated when worms were found via field examination. Using this formula, total acreage treated amounted to 11,058 acres in 189 fields--7,897 acres in 122 fields in Pinal, 1,918 acres in 48 fields in Maricopa, and 1,243 acres in 19 fields in Pima. A cumulative total of about 60,000 acres had been treated by June 30, and the season's total was anticipated to exceed 105,000 acres. Treatment started on May 23 on some extremely early fields and five regular applications had been made by the end of the fiscal year.

The treatment area included only 11 fields or 649 acres which had previously been treated since the beginning of the program in 1958.

All fields were treated by plane except 120 acres in 9 fields. DDT was used on all fields where drift was not a problem. Sevin was used on all fields adjacent to or within 500 feet of forage crops, dairies, poultry farms, etc., where drift was considered hazardous. Sevin-treated fields totaled 4,570 acres; DDT-treated fields, 6,488 acres. Sevin 80S was used, and no problems developed in connection with mixing or application. Per acre dosages were 2 pounds actual DDT or 2 pounds actual Sevin for the first 4 applications and $3\frac{3}{4}$ pounds of DDT or $2\frac{1}{2}$ pounds of Sevin for the last 5 applications. Both insecticides were applied at volumes of 3 gallons per acre for the first 4 applications and 5 gallons per acre for the last 5.

The plow-up deadline established by the Arizona Commission of Agriculture for the 1960 crop was February 1, 1961, and approximately 8 percent of the growers were not in compliance on that date. The flagrant violators were prosecuted. Sixty-four cases were filed. The planting date was set at April 1, and compliance was excellent.

In the State of New Mexico, 8,305 tons of treated commodities were certified for movement outside the infested area.

improving light traps used for detecting PINK BOLLWORM moths is a continuing process.

Fan mounted on top of fins over lights to deflect moths down into collection can.



Black and Argon lite units which can easily be interchanged and used on the same lite stand giving us a dual-purpose device.

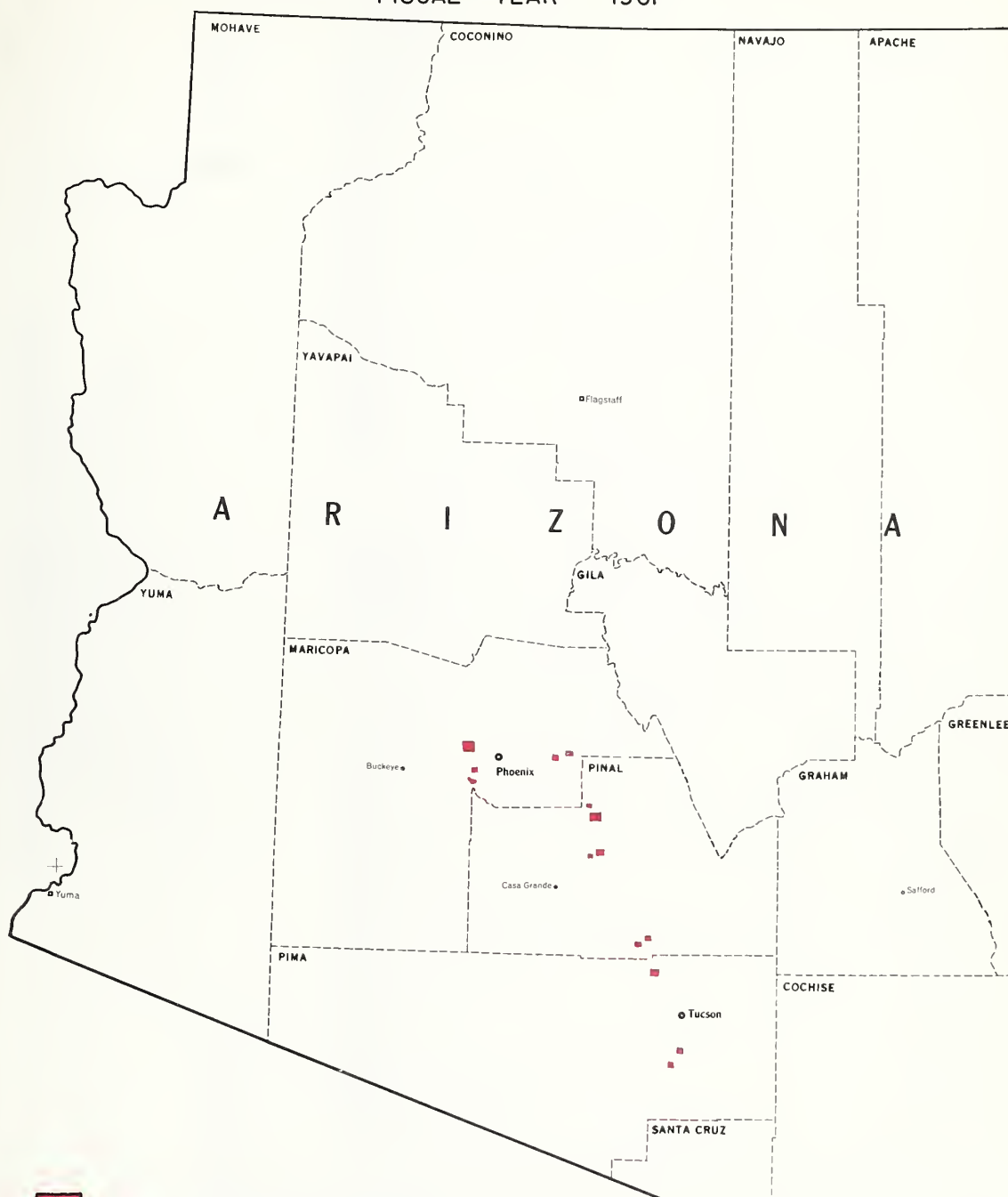
Series of screens in can at base of light trap separates the various sizes of insects as collected.





PINK BOLLWORM ERADICATION

FISCAL YEAR -- 1961



 AREAS TREATED Spring-Summer 1961

(Estimated acres treated - 10,744)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION
WESTERN REGION
JUNE 30, 1961



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

SUMMARY OF ASSOCIATED ACTIVITIES

Program Pink Bollworm Control

Fiscal Year 1961


| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | Special Reports |
|---------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|-------|-------|-----------------|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul.* | Cir.* | |
| Arizona | 23 | 13 | 9 | 1 | | | 11 | 24 | 300 | 62 | |
| Calif. | 3 | 3 | 3 | | 2 | 1 | | 1000 | 1000 | 60 | 2 |
| Nevada | | | | | | | 1 | 1 | | 1 | 2 |
| Total | 26 | 16 | 12 | 1 | 2 | 1 | 12 | 1025 | 1300 | 123 | 4 |


* Written by Federal personnel for release direct or through cooperators.

PINK BOLLWORM CONTROL—ERADICATION

JUNE 30, 1961



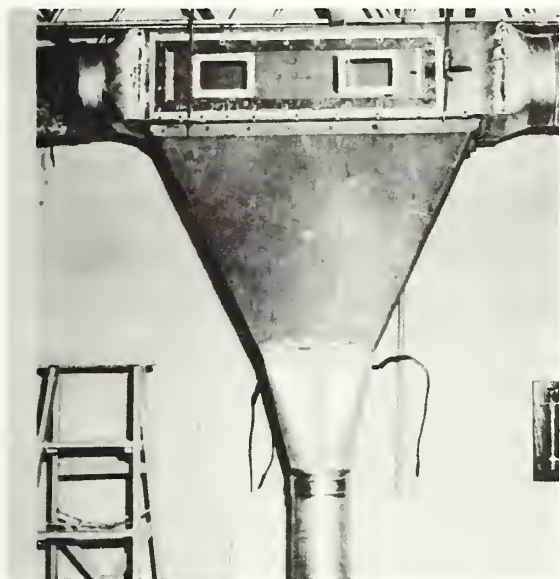
 COTTON GROWING AREA

 REGULATED AREA

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION
WESTERN REGION

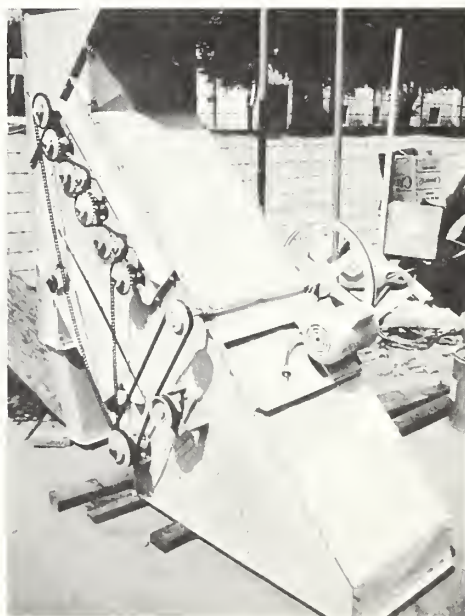
JUNE 30, 1961

collecting and processing gin trash for detecting PINK BOLLWORM are problems receiving considerable attention -- several new and interesting devices have been developed and are being tested.



To get better gin trash and before it goes through the dryers, this device, developed by California Plant Pest Control personnel, is to be inserted in the air line between the rock catcher and the first dryer. Preliminary tests are very encouraging.

A machine developed by Arizona Plant Pest Control personnel and designed to be placed in the air line between the rock catcher and the first dryer is intended to collect and process gin trash as one operation.



PLANT PEST SURVEY

Cooperative Economic Insect Survey

New Mexico signed a new and modified cooperative agreement during the fiscal year, bringing the total states under contract in the Western Region to seven. Appreciation and interest in the program continued to grow, as evidenced by improved reports and participation in preparing insect crop loss statements and state insect summaries. Weekly insect occurrence reports from all states were regularly submitted to Washington.

During the year work plans were reviewed and rewritten where necessary. Weekly report format procedure was discussed in a few of the states, and agreeable changes were adopted.

Five insect detection workshops were held during March and April, sponsored by State cooperators with assistance from Plant Pest Control personnel. The workshops were well planned and presented. Approximately 350 persons participated, representing an excellent cross section of agricultural workers. Workshops were held in Oregon, Utah, Arizona, New Mexico, and Colorado. (Wyoming-Colorado held a joint meeting.)

Insect Detection

Limited detection surveys were made in some states throughout the year for the possible introduction of new plant pests; i.e., sorghum midge (Contarinia sorghicola) in Arizona; Mexican bean beetle (Epilachna varivestis) in Idaho; imported fire ant (Solenopsis saevissima richteri) in California, New Mexico, and Arizona; witchweed (Striga asiatica) in all Western States; European corn borer (Ostrinia nubilalis) in Wyoming; and European chafer (Amphimallon majalis) in Arizona.

The Division exhibits on Khapra Beetle and Survey and Detection were displayed at the Entomological Society of America, Pacific Branch Meeting, held in Santa Barbara, California, June 19-23. The response and favorable comments regarding these displays were very encouraging.

Beet Leafhopper (Circulifer tenellus)

Early in the year a review was made of the beet leafhopper survey program in an attempt to standardize infestation rating and sampling procedures. An effort was made to determine the value and use of survey results and to establish more permanent and representative survey areas. We believe the resulting plan will give a uniform and timely report.

Arrangements were made for Plant Pest Control personnel in the Southern Region to survey southeastern New Mexico as a part of their Texas area survey activity. Data obtained will be reported in one statement for the two states.

Early spring beet leafhopper surveys in southwestern Idaho indicated a heavy carryover of overwintering adult beet leafhoppers, which subsequently developed into populations requiring control to prevent their movement from public lands into nearby crops. A total of 14,844 acres was sprayed in Gooding and Elmore Counties, using both aircraft and ground equipment. Control results were exceptionally good.

Potato Psyllid (*Paratrioza cockerelli*)

During March, surveys were made in the potato psyllid spring breeding areas of New Mexico, Arizona, and California. Immediately upon completion of the survey, a psyllid situation statement was prepared and released for use by those northerly states concerned. Overwintering populations were much lighter than a year ago, probably due to the extended drought and poor host plant conditions.

Arrangements were made and approved whereby Plant Pest Control personnel from the Southern Region will include the Las Cruces, New Mexico, area in their survey schedule. This particular area can be more easily and economically done by the Southern Region. It was originally a part of the El Paso, Texas, survey area #5.

Japanese Beetle (*Popillia japonica*)

Beginning in June, 4,878 Japanese beetle traps were exposed in nine of the Western States. Only in California were any beetles trapped. Trap placement was limited to all major civilian and military airports except in California. In that state, what promised to be a routine detection program quickly developed into a real pest problem with the finding on June 7 of a live Japanese beetle on shrubbery on the Capitol grounds in the city of Sacramento. Quickly organized groups surveyed the nearby area surrounding the first beetle find and discovered 14 more adult Japanese beetles. Personnel of the Eastern Region assisted in evaluation of the problem and its solution. The Central Region facilitated procurement of expanded survey facilities.

One hundred and fifty traps were immediately placed in Capitol Park and adjacent properties. As additional traps were obtained, they were exposed throughout the Sacramento area, eventually bringing the total to 2,893. This extensive trapping operation was supplemented by a crew of State and Federal employees assigned to visually inspect host plantings on a property-to-property basis, fanning out from the original discovery location. California State Department of Agriculture immediately

inaugurated a control program, participated in by county and city of Sacramento, which, after extensive delimiting surveys, developed into an eradication effort with the Plant Pest Control Division participating on a fifty-fifty basis. The known and probable total infested acreage is approximately 160. However, some 1,600 acres are included in the eradication area and scheduled for soil and foliar spraying of all host plants.

Every precaution was taken to assure protection of adjacent areas from infestation by carefully and promptly inspecting all nurseries within a 10-mile radius of the known infested area. Retail nursery stock outlets in the Sacramento area handle only material obtained from outside the infested area.

Visual inspection of baggage and passenger compartments of transcontinental aircraft originating from Japanese beetle infested areas at east coast points was made at major termination points on the west coast during July and August of 1960 and June 1961. Numerous live and dead beetles were recovered during the inspection period at each point, with the majority of "finds" at Los Angeles and San Francisco. Aircraft examinations were made by Federal, State, and county inspectors, fully assisted by airlines personnel.

Halogeton (Halogeton glomeratus)

Plant Pest Control personnel in cooperation with State and/or Bureau of Land Management employees participated in a minor way in limited surveys for this weed in Oregon, Idaho, Utah, and Nevada. While performing their regular program functions, Plant Pest Control personnel are always alert to observe the occurrence and abundance of halogeton throughout all Western States.

Gypsy Moth (Porthetria dispar)

One hundred gypsy moth traps and sufficient Gyplure for the season were supplied to the California State Department of Agriculture early in the year for use in park areas in Northern California. The thought was that tourists from the infested areas in the East, traveling across country, using tents and other similar camping equipment, could easily and innocently bring this pest into California. Results of the survey for the report period were negative.

European Pine Shoot Moth (Rhyacionia buoliana)

This destructive pest of pines only recently discovered in Washington and Oregon has caused considerable concern to the Forest Service (USDA) and State Forest and Conservation officials throughout the Western States.

Extensive surveys made by those agencies in the two states centered the infestations in the Portland-Salem areas of Oregon and in the Seattle-Tacoma and Spokane areas of Washington. Measures were immediately taken to destroy infested trees or nursery stock and otherwise contain the infestation in as small an area as possible until effective and safe treatment methods could be developed. The Plant Pest Control Division was asked by the Forest Service, State Forest agencies, and industry to consider the advisability of promulgating a Federal quarantine against the European pine shoot moth. After careful consideration of the problem by all concerned, it was decided that uniform quarantines invoked by individual, interested states would best accomplish the desired result. Such quarantines were adopted and put into force by Oregon, Washington, Idaho, Montana, and Utah.

Technical assistance was requested by the Forest Service and provided by the Region to aid in developing fumigation methods patterned after successful Hall scale procedures. We also assisted the Forest Service in developing intensive delimiting survey methods similar to those so successfully used in barberry eradication.

During late May, European pine shoot moth infested nursery stock was moved by truck from a nursery in Salem, Oregon, to two large nurseries in or near Salt Lake City, Utah. This transfer of infested pines emphasized the importance of controlling the movement of nursery stock to prevent spread of the pest and made the Division, the Forest Service, and industry immediately cognizant of the possibility of infested pines being already present in many nurseries throughout the West. With this in mind, we, in cooperation with Forest Service and State personnel, immediately inspected all nurseries handling susceptible pine stock in the Western States, except in California. California advised that their regular nursery inspection service was adequate and efficient enough to assure immediate detection of an infestation, should it appear. Other than in the two infested states and the two nurseries in Utah, no infested trees were revealed by the survey.

Hall Scale (Nilotaspis halli)

Minimum inspections were made in the previously known infested areas of Butte and Yolo Counties in California. In addition, some checking was done in isolated host plantings in the two counties. No indication of the presence of Hall scale could be found in any of the orchards inspected.

Oriental Fruit Fly (Dacus dorsalis)

On July 29, 1960, a gravid female oriental fruit fly was trapped near Anaheim, Orange County, California. About one month later, a male fly was trapped $1\frac{1}{2}$ miles from the site of the first find. On September 20 another female fly was taken in a trap in Santa Barbara County, nearly one hundred miles from the first find.

With the discovery of the first fly, a very intensive trapping program was immediately undertaken with more than 3,000 traps being exposed throughout Southern California, using oriental fruit fly lure.

In addition to the trapping operations, large amounts of host fruits and vegetables were inspected. No additional fruit flies were found.

The Division took an active part in the program, furnishing all traps and most of the lure and assisting in the survey activities with trained personnel. Intensive trapping on the off-shore island of Santa Cruz was done entirely by Plant Pest Control personnel. This activity was to check possible fly emergence from fruit and debris jettisoned by ships from infested areas. Such host material lodges on the shores of California's off-shore islands. The major portion of the campaign and its direction was borne by the California State and County Departments of Agriculture.

During periods of the year when conditions are thought to be favorable for fruit fly survival, trapping was done in host plant areas of Maricopa, Pima, Santa Cruz, and Yuma Counties of Arizona. All detection activities during the year were negative.

Rhododendron Rust (Chrysomyxa ledi var. rhododendri)

While inspecting nurseries for barberry regulatory compliance in Washington and Oregon, Plant Pest Control personnel made casual observations of rhododendrons for rhododendron rust infection. No infection of epidemic proportion that would be typical of the European rhododendron rust was observed. State Department of Agriculture officials in both states are alert for this disease and continue to destroy infected plants found in nurseries and determined to be a hazard in trade. They reject incoming infected plants. Nurserymen in the Long Beach, Washington, area continue to use Acti-dione derivative "Actispray" in controlling rhododendron rust in their nurseries where the disease was first found and gained a foothold.



State Clearing Offices
For Economic Insect Survey Reports

| | |
|------------|--|
| Arizona | Dr. James N. Rooney, Extension Entomologist
University of Arizona, Phoenix |
| California | Mr. Robert W. Harper, Chief, Bureau of Entomology
State Department of Agriculture, Sacramento |
| Colorado | Dr. Leslie B. Daniels, Head, Department of
Entomology, Colorado State University, Ft. Collins |
| Idaho | Dr. H. C. Manis, Head, Department of Entomology
University of Idaho, Moscow |
| Montana | Dr. James H. Pepper, Head, Department of Zoology
and Entomology, Montana State College, Bozeman |
| Nevada | Mr. Lee M. Burge, Director, Division of Plant Industry
State Department of Agriculture, Reno |
| New Mexico | Mr. Dallas Rierison, Director, New Mexico Department
of Agriculture, New Mexico State University
University Park |
| Oregon | Mr. Hugh Taylor, Chief, Division of Plant Industry
State Department of Agriculture, Salem |
| Utah | Dr. George F. Knowlton, Extension Entomologist
Utah State University, Logan |
| Washington | Dr. Horace S. Telford, Chairman, Department of
Entomology, Washington State University, Pullman |
| Wyoming | Dr. Robert E. Pfadt, Head, Department of Entomology
University of Wyoming, Laramie |

COOPERATIVE ECONOMIC INSECT SURVEY

JUNE 30, 1961



- STATES WITH COOPERATIVE SURVEY AGREEMENTS
- STATES WITH NO AGREEMENT
- STATE CLEARING HOUSES

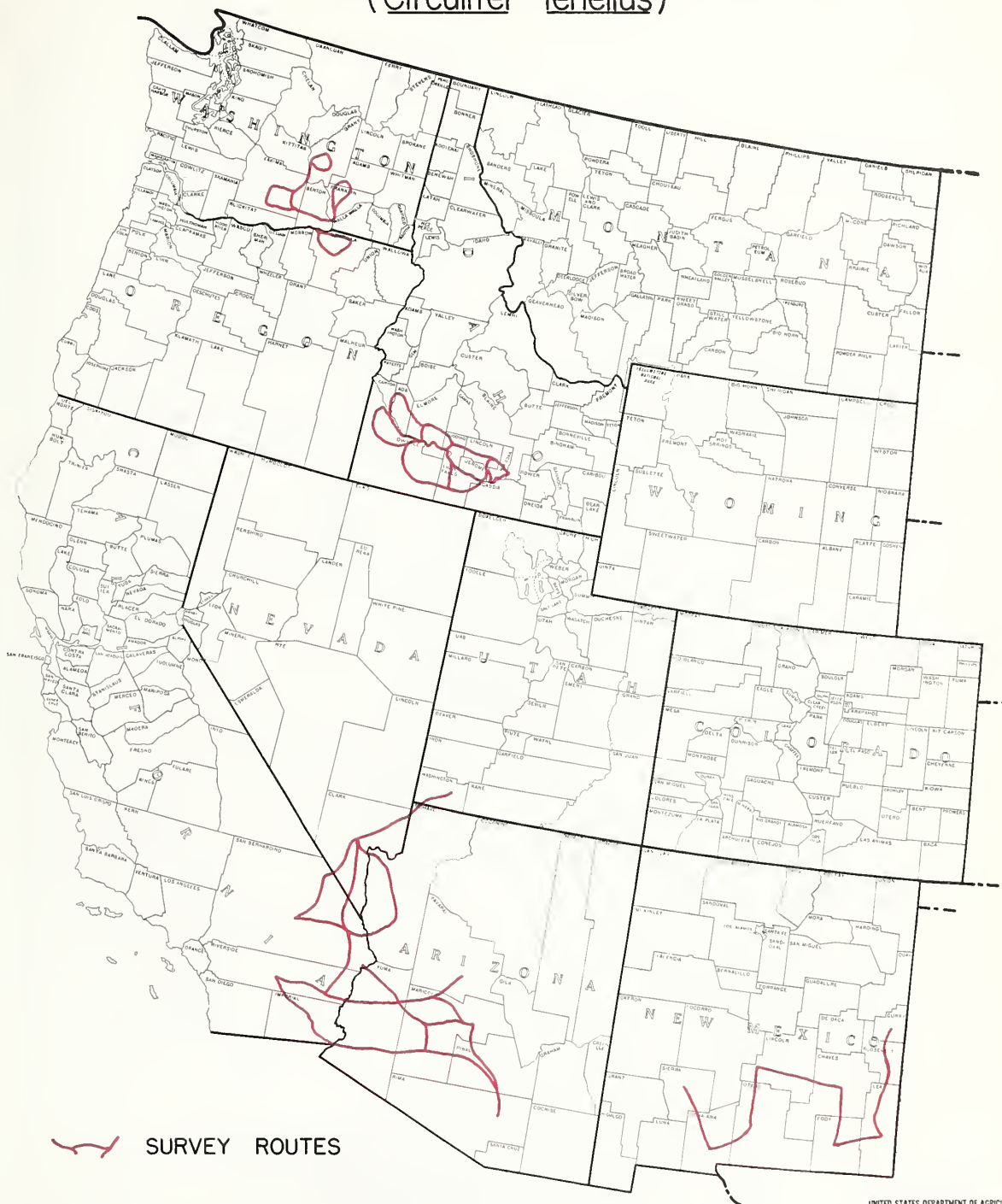
UNITED STATES DEPARTMENT OF AGRICULTURE
 AGRICULTURAL RESEARCH SERVICE
 PLANT PEST CONTROL DIVISION
 WESTERN REGION
 JUNE 30, 1961

Survey Entomologists

| | | |
|------------|---|-------------|
| Arizona | Mr. Leon Moore
Arizona Commission of Agriculture
and Horticulture | Phoenix |
| California | Mr. Ronald Hawthorne
State Department of Agriculture | Sacramento |
| Colorado | Mr. Leonard E. Jenkins
Colorado State University | Ft. Collins |
| Nevada | Mr. Robert C. Bechtel
State Department of Agriculture | Reno |
| Oregon | Mr. Joseph Capizzi
State Department of Agriculture | Salem |
| Wyoming | Mr. D. G. Fullerton
University of Wyoming | Laramie |

BEET LEAFHOPPER SURVEY

(*Circulifer tenellus*)



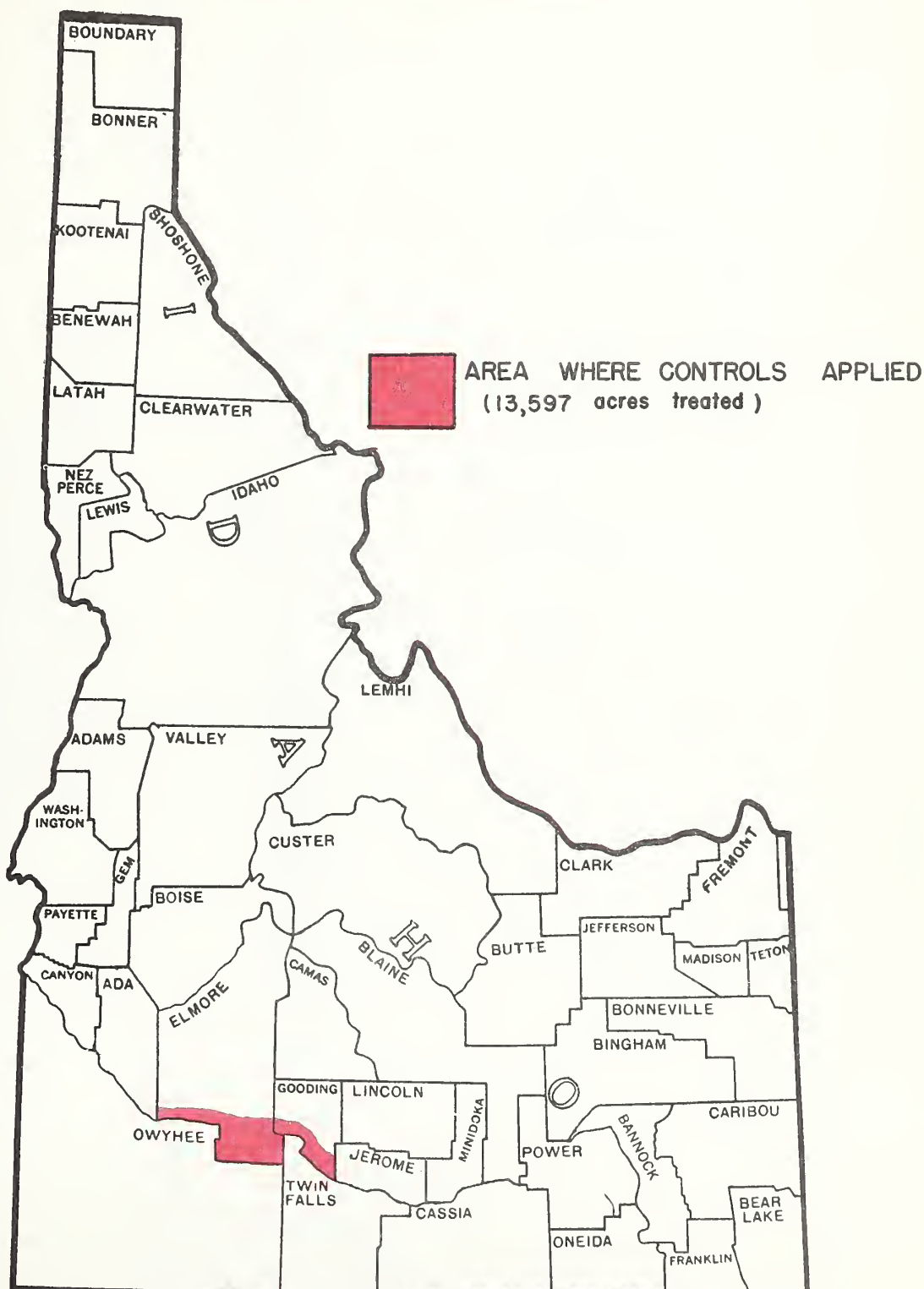
SURVEY ROUTES

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION
WESTERN REGION

JUNE 30, 1961

BEET LEAFHOPPER CONTROL PROGRAM

FISCAL YEAR 1961



UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

SUMMARY OF ASSOCIATED ACTIVITIES

Program Plant Pest Survey

Fiscal Year 1961

| Area | Public Meetings Attended | P r e s e n t a t i o n s | | | | | Feature & News Stories* | Extent These Aids Were Used | | | Special Reports |
|---------|--------------------------|---------------------------|--------|-------|-------|----|-------------------------|-----------------------------|-------|-------|-----------------|
| | | Talks | Slides | Films | Radio | TV | | Exhibits | Bul.* | Cir.* | |
| Arizona | 24 | 1 | 2 | | | | 2 | 1 | 100 | 100 | |
| Calif. | 11 | 11 | 9 | 3 | 5 | 5 | 7 | 1 | 3000 | 1500 | 5 |
| Idaho | 6 | | | | | | 4 | | | | |
| Oregon | | | | | | | | | | 15 | |
| Utah | 3 | 10 | 4 | 1 | 1 | | 15 | | 460 | | 16 |
| Wash. | | | | | | | | 1 | | 25 | |
| Total | 44 | 22 | 15 | 4 | 6 | 5 | 28 | 3 | 3560 | 1640 | 21 |

* Written by Federal personnel for release direct or through cooperators.

Note: The above report covers all activities other than regular programs such as Beet Leafhopper, European Pine Shoot Moth, Imported Fire Ant, and Japanese Beetle.

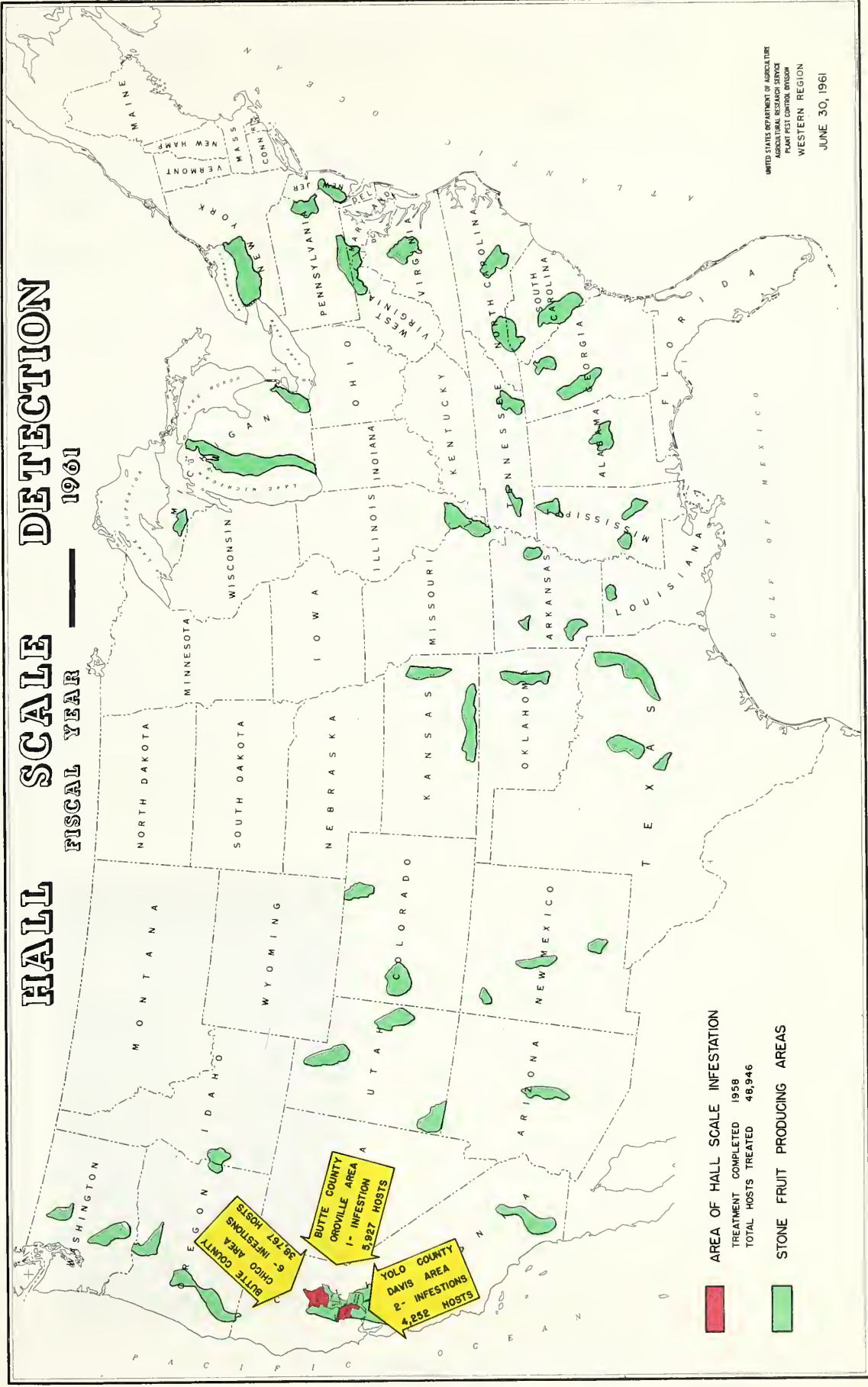
BE ALERT!

BE FIRST

TO DETECT AND REPORT
ANY NEW PLANT PEST



1. Learn to recognize common pests.
2. Watch for unusual plant injury to farm crops, forest and home plantings.
3. Watch for unfamiliar insect-feeding on plants.
4. Watch for the sudden appearance of large numbers of damaging insects.
5. REPORT observations PROMPTLY to your nearest agricultural official.



the JAPANESE BEETLE moves west

Finding this destructive pest in California
on June 7, 1961 brought home the real
significance of EARLY DETECTION - PROMPT REPORTING.

Insecticides were
applied to foliage
and soil by day --

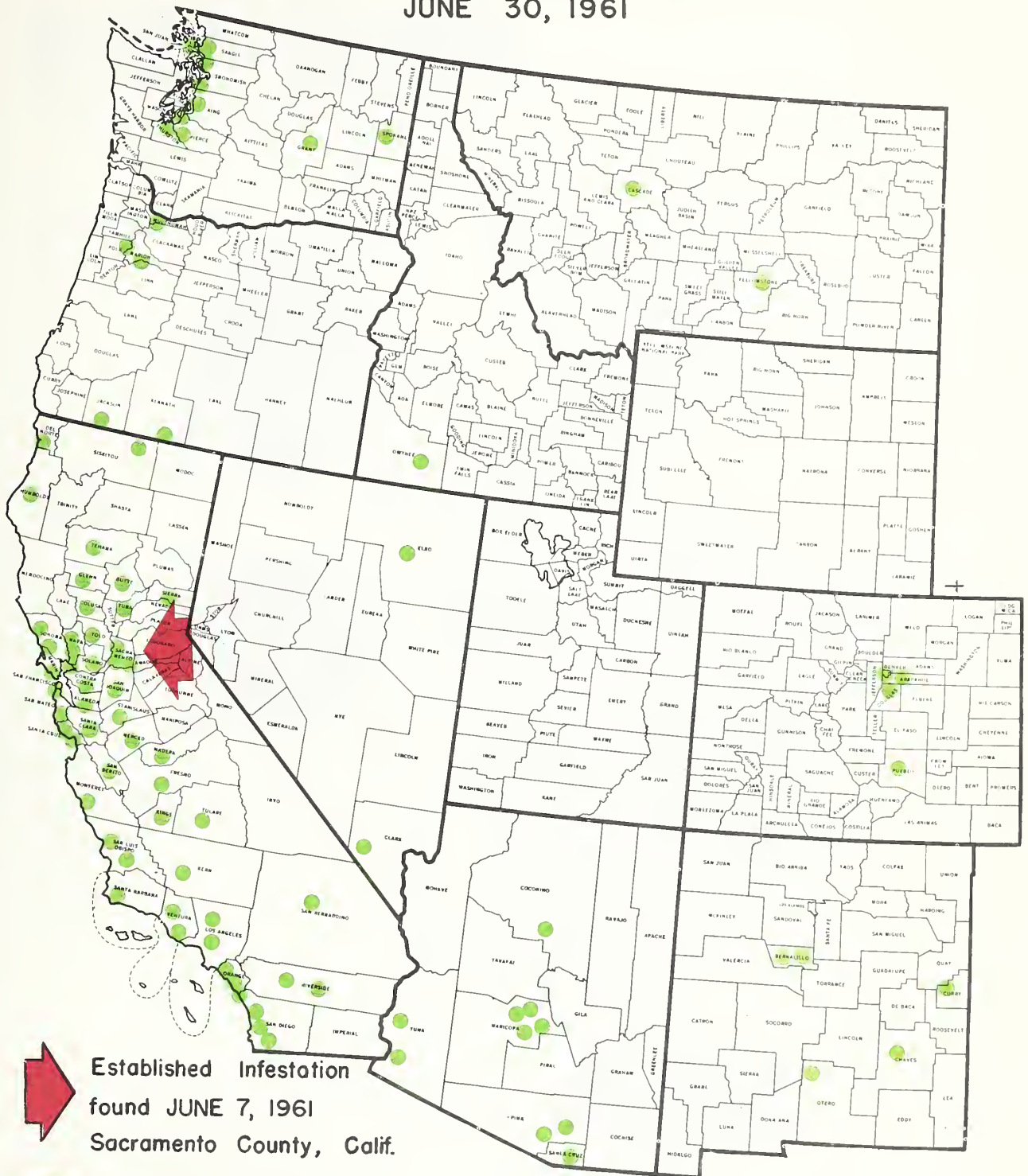


--and by night.



JAPANESE BEETLE PROGRAM

JUNE 30, 1961



Established Infestation
found JUNE 7, 1961
Sacramento County, Calif.

JAPANESE BEETLE
TRAP LOCATIONS

TOTAL TRAPS EXPOSED--- 4878

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION
WESTERN REGION
OAKLAND, CALIFORNIA
JULY 1961



JAPANESE BEETLE

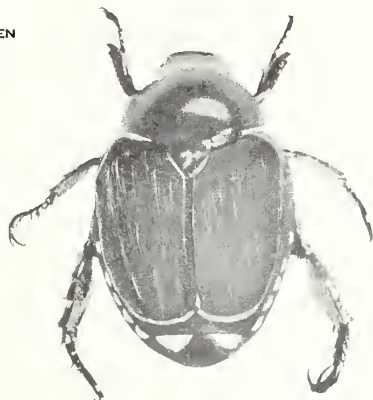
52

STOP-LOOK

LEARN TO RECOGNIZE THE JAPANESE BEETLE

WATCH FOR THIS INSECT

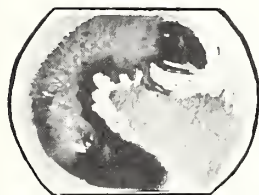
METALLIC GREEN
BODY



BRONZE
WING COVERS

6 WHITE SPOTS
ON EACH SIDE
OF THE BODY

THIS BEETLE IS
JUST UNDER
½ INCH LONG



GRUB STAGE (ENLARGED)

Assistance by the public
is solicited in DETECTING
Japanese beetles.

JAPANESE BEETLE

THE JAPANESE BEETLE MOVES WEST

THIS DESTRUCTIVE PEST FEEDS HEAVILY ON THE FRUIT, BLOSSOMS, AND VEGETATION OF MORE THAN 275 PLANTS, SHRUBS, AND TREES. FOR SOME TIME THE JAPANESE BEETLE HAS BEEN WELL ENTRENCHED ALONG THE ATLANTIC SEABOARD FROM MASSACHUSETTS TO SOUTH CAROLINA. SINCE 1952 IT HAS INCREASED AND SPREAD, APPEARING AT SCATTERED POINTS IN SEVERAL STATES OF THE MIDWEST EAST OF THE MISSISSIPPI.

IN THE SUMMER OF 1961 AN ESTABLISHED INFESTATION OF JAPANESE BEETLES WAS FOUND IN CALIFORNIA.

THE JAPANESE BEETLE SPENDS ABOUT 10 MONTHS AS A GRUB IN THE SOIL, WHERE IT FEEDS ON ROOTS OF VARIOUS PLANTS AND OFTEN CAUSES SERIOUS DAMAGE TO TURF IN LAWNS, PARKS, GOLF COURSES, PASTURES, AND OTHER TURFED AREAS.

IN LATE MAY OR EARLY JUNE THE GRUBS STOP FEEDING AND GO THROUGH A SHORT RESTING, OR PUPAL STAGE, AFTER WHICH THEY BECOME ADULT BEETLES. THE ADULTS THEN DIG THEIR WAY OUT OF THE SOIL. BY MID-JUNE THEY CAN BE OBSERVED FLYING ABOUT AND FEEDING ON TREES AND PLANTS, CAUSING EXTENSIVE DAMAGE TO FRUIT, FOLIAGE, AND FLOWERS.

DURING LATE JULY OR EARLY AUGUST THE FEMALES PERIODICALLY GO INTO THE GROUND AND LAY EGGS TO START THE CYCLE OVER AGAIN.

YOUR HELP IS NEEDED. BE ALERT TO DETECT THE EARLIEST APPEARANCE OF THIS INSECT WHEREVER IT MAY BE OBSERVED.

REPORT

THIS SERIOUS PEST OF TURF, FRUIT, AND
ORNAMENTAL PLANTINGS TO YOUR NEAREST
COUNTY AGRICULTURAL OFFICIAL

18 5077.6







